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CARDIAC HÆMATOMATA AND THROMBI.*

BY PROFESSOR WALLEY, EDINBURGH VETERINARY COLLEGE.

THE subjects upon which I am about to treat have received but scant notice at the hands of veterinary surgeons; many practitioners, indeed, being utterly ignorant of their importance—pathologically or otherwise. My attention has been directed more particularly to these subjects in connection with legal proceedings, and it is to a consideration of the legal aspect I wish to lead your minds to-night, in order that some definite conclusions may be arrived at, which shall be tolerably sure guides to all veterinary practitioners.

My object is, chiefly, to consider two distinct—though often confounded—conditions: viz., Cardiac Hæmatomata, and Cardiac *ante-mortem* Thrombi.

With *post-mortem* clot we have little to do, and will dismiss it in a few words.

Coagulation of blood in the heart may take place immediately at death, or subsequently. In either case, the clots present distinctive characters.

First, masses of coagulated blood with the red cells diffused

* Read at the Central Veterinary Society's Meeting on May 8th.

more or less equally through them, producing either a uniformly black, or a mottled appearance.

Secondly, clots, more or less extensive, presenting a stratified appearance and character, owing to the separation and subsidence of the red cells and the coagulation of the fibrin; these clots differ in no respect from the coagula formed by blood when withdrawn from the vessels during life, and set at rest. The layers of fibrin correspond to the uppermost part of the heart, the cells (subsiding by their gravity) to the lower portions of the cavity.

They are never united with any degree of firmness to the endocardium, though a little force may be required in order to detach them from the interstices of the *musculi pectinati*, from the valves, the *chordæ tendinæ*, or moderator bands; neither have such clots any marked degree of cohesive affinity, or of fibrillization.

The localization of *post-mortem* clot will depend upon the condition of the lungs, the systemic circulation, and the heart itself.

If pulmonary obstruction exists, the clot will be formed in the right,—if systemic, venous, or arterial obstruction, in the left ventricle; while, if weakened conditions of the walls of the heart, either physiologically or organically, exist, or if death occurs from cardiac relaxation or debility, the coagulation will take place simultaneously in all the cavities.

Cardiac Hæmatomata.

So-called "cardiac blood-tumours" nearly always originate in endocardial extravasation. The extravasate, pressing upon the endocardium, interferes with its nutrition; it becomes dry, loses its glistening appearance, and finally yields to absorption or pressure.

Sub-endocardial extravasation is very frequently a symptom of blood depravation or degradation, but it may arise from any sudden and violent spasmodic action of the heart; hence is an accompaniment of death from fright, and from hæmorrhage in other and important organs as the result of rupture. In my experience it has occurred most frequently in the left ventricle;

but, curiously enough, the two best specimens I have seen of Cardiac Hæmatoma were located in the right heart, and in close proximity to the base of the tricuspid valve.

I think this apparent anomaly may possibly be explained by assuming that large extravasations in the left heart would produce instant death, or, from the greater pressure put upon the left side, the endocardium would give way while the blood was yet fluid, and allow of its escape into the general circulation, the resulting wound healing up without any further consequence than the formation of a cicatrix.

In the formation of these hæmatomata, we find that the more solid and viable portions of the extravasate undergo coagulation (the liquid portions becoming absorbed), and ultimately imperfect organization takes place, which may again be followed by adipose, molecular, or other form of degeneration.

If the clot remains solid, it produces no further mischief than that which results from mechanical interference with the action of the heart, the symptoms of which would be regulated by the size and situation of the tumour, but would necessarily be ambiguous.

If the clot softens, an abscess is the result, the endocardium becomes inflamed, thickened, and ultimately ulcerated, allowing of the discharge of its contents into the adjoining cavity. Small masses may become detached, carried away by the circulation, lodged in other vessels at a distance, and originate embolisms.

Occasionally the blood clot, while remaining firm, gives rise to roughening of the superjacent endocardium—probably absorption of it: the roughened surface acts as a nidus for the deposition of lymph from the blood. This new layer, by contracting and corrugating, favours secondary coagulation, and the process goes on indefinitely, until a beautifully stratified and large tumour is produced, composed mainly of coagulated fibrin intermixed with a greater or less quantity of blood corpuscles. Even in this case, portions of the clot will be found softened and broken down. It is easy to understand that, in addition to mechanical interference with the action of the heart, such a formation must ultimately lead to hypertrophy of the wall of the cavity in which it is situated.

To illustrate these remarks, I introduce to your notice three specimens. The first is a large endocardial extravasation, situated in the body of one of the *musculi papillares* of the left ventricle. When first removed, it showed the roughened dry condition of the endocardium very markedly; and judging from its appearance, I have not the slightest doubt that, had the animal lived sufficiently long, the endocardium would have eventually given way to the pressure put upon it.

The second specimen is that of a hæmatoma in connection with the base of the tricuspid valve, and which had undergone partial softening, portions of it having evidently become detached, and in all probability lodged in the vessels of the spine as the animal became paralysed prior to death. Extensive disease of the liver and kidneys was also present—owing, I think, to interference with the venous circulation, from the backward pressure of blood which was induced by the incompetent state of the tricuspid valve.

The third specimen is that of a hæmatoma, also connected with the right auriculo-ventricular ring, on the surface of which secondary coagulation in concentric layers has gone on to such an extent as to produce the largest mass of the kind which has yet come under my notice. The original hæmatoma appears of a somewhat homogeneous character, and it is penetrated, to a considerable depth, by granulations springing from the endocardial surface.

This specimen was removed (as you see it) from the heart of a cow; but unfortunately I could glean nothing of the history of the case, except that the cow was much emaciated.

Ante-Mortem Clots.

The Predisposing Causes of *ante-mortem* coagulation are: any disease of the endocardium, by which a rough surface is produced, as inflammation, ulceration from the pressure and softening of extravasates or hæmatomata; cicatrices, calcareous degeneration, etc., and elevations or injuries of the endocardium by foreign bodies penetrating from the stomach, or by the lodgment of entozoa beneath it.

The actual causes are diminished cardiac power, with or without a plastic condition of the blood, as the result of some zymotic, septic, or debilitating affection, or from the action of poisons, Congestion of the Lungs, Pulmonary Thrombi, extensive arterial Embolism or Thrombism, or general venous stagnation.

In practice we find that these clots, when resulting from Pulmonary Congestion or Thrombism, are always located in the right heart, and as a rule clotting commences in the pulmonary artery or its branches, and increases in extent in a backward direction towards the *conus arteriosus,* until the pulmonary artery becomes obliterated and the *conus arteriosus* filled. In clotting, as the result of an altered condition of the blood and diminished cardiac power (as in zymotic or septic affections), we usually find the left ventricle or auricle to be the seat of the thrombus. In the auricle it may originate in the *musculi pectinati* of the apex, and extend towards the base, thence through the auriculo-ventricular opening into the ventricle or along the pulmonary veins—in the former case producing incompetency of the mitral valve, in the latter acute pulmonary congestion.

In the ventricle it may commence at the apex from the moderator bands or the inner *carnea columna ;* but this method of clotting is, I think, a rare occurrence—as a rule the coagulation commencing in the aortæ and their branches, and extending backwards into the ventricle.

Ante-mortem clot as the result of Zymotic or Septic disease, Debility, or Anæmia, is brought about by inability of the cardiac walls to contract upon their contents, owing to one or other, or to a combination, of the following factors,—viz., the blood being impure or impoverished, and not producing the stimulating effect of healthy blood upon the cardiac nerves or the circulating nerve centre; debility of the cardiac muscles from insufficient nourishment, or from the supply of blood being (though healthy) too small in quantity.

In *ante-mortem* clot as the result of Pulmonary Congestion, several factors are also in operation to produce it: they are, increased plasticity of the blood; obstruction to the flow of blood through the pulmonary arteries; and the absence of the

normal stimulus (oxygen) in the blood. In Pulmonary Thrombism the same factors are in operation.

Symptoms, or indications of the formation of cardiac thrombi may be (1) Unmistakable and urgent; (2) Insidious and unobserved or unsuspected.

In the first case, the pulse becomes irregular in every sense of the word—in volume, force, and rhythm—and is not in relation with the action of the heart; the breathing laboured and distressed, and even oral and gasping; the head extended, the forelegs abducted so as to form fixed props, the mucous membranes of a livid hue, the temperature lowered, and the body bedewed with perspiration; the animal is incapable of progressing, and if urged to do so falls over; the superficial veins are distended, jugular pulse and jugular vibration are marked; the carotids struggle violently and spasmodically, the heart beats tumultuously, and imparts a sensation to the hand as though it were tumbling topsy-turvy; while on auscultation various cardiac sounds are heard—as blowing, fluttering, grating and gurgling. The animal shows great uneasiness by constantly moving the fore-legs, grunting and throwing up the head; and the countenance is expressive of extreme anxiety.

Whenever irregularity of the heart's action is detected in the course of an attack of Pulmonary Congestion, clotting may be feared, and in case of recovery resulting valvular disease dreaded. In the same way, if the symptoms I have described make their appearance during the progress of zymotic or septic affections, the prognosis must be unfavourable. If the clotting is extensive life cannot continue long—in fact, from two or three to twelve or twenty-four hours may be set down as the limit.

In the second class of cases the animal often evinces no symptoms to attract particular attention, or to direct the mind to cardiac clotting; in a few instances—as was the case in the animal from which the clot I exhibit was removed by my colleague, Mr. Baird—the heart may have been weak and irregular in its action for a day or two, and other signs of ill health may have been apparent; but it not unfrequently happens that a horse which has apparently recovered from an attack of ordinary Cold or a low Fever, and has been left all right over night, is found by

the attendant, to his astonishment, dead in his stall or box, on his going in to feed him in the early morning; and on *post-mortem* examination no possible cause of death can be discovered, except a large *ante-mortem* cardiac clot.

Treatment.—Treatment can only be considered as applying to those cases in which good grounds exist for the belief that cardiac clotting is taking place, or is actually in existence; and, although it may be a forlorn hope to attempt to do battle with such an enemy, it is, nevertheless, our duty to persevere to the end.

The primary and paramount necessity of paying strict attention to the general comfort of the animal, to the allowance of a plentiful supply of pure cold air and water, and to the equalizing of the circulation by friction, rugs, bandages, etc., cannot be too strongly urged. The aims of treatment are—to preserve the fluidity of the blood, to rouse and support the nervous energy, and to stimulate the action of the heart and the systemic circulation. How can these ends be accomplished?

Firstly, by the administration of a solvent; and for this purpose we have nothing equal to carbonate of ammonia.

Secondly, by stimulating the respiratory centres; and here again ammonia comes to our aid.

Thirdly, by the repeated application of smart irritants—as mustard or ammonia liniment to the skin.

Fourthly, by judicious administration of such diffusible and general stimulants as brandy, whisky, and spirits of nitric æther.

Is venesection of any use? In exceptional cases, and to a moderate extent, it may be—by diminishing cardiac and pulmonary pressure.

Will tracheotomy be of any avail? As a rule, *none*, because there is no obstruction to the ingress of air through the larynx and trachea.

Should we be justified in having recourse to intra-venous injection of ammonia? Most positively, *yes*, in desperate cases, as it can be done with impunity and without much difficulty.

The characteristic *post-mortem* appearances of these clots are

(as was well shown in the clot which I present for your examination) a fair amount of cohesion, affinity, solidarity, and resistance; distinct fibrillization which, as also the firmness, is most marked in the parts of the clot first formed; slight adhesion to the endocardium, and particularly in those parts of the heart in which processes from the clot are inserted between the natural elevations, as between the *musculi pectinati*, or have become entangled in the *chordæ tendinæ* or the moderator bands. As a rule they are decolorized, or of a pale yellow hue, and form perfect casts of the parts in which they are found. Intermixture of white cells to a greater or lesser extent is always present, but there is no vascularity.

And now I come to one of the most important questions in connection with this subject—viz., its medico-legal aspect.

I need scarcely point out to you the fact that if a man sells a horse with a warranty of soundness he is liable (unless the warranty is accompanied with a distinct limitation of time) for the value of the animal if he succumbs to the effects of an occult organic disease, no matter how long a period may have elapsed between the date of sale and date of death, provided it can be proved by scientific evidence that the particular organic disease *must* have been in existence when the animal was sold. Probably the task of affixing limitations to the existence of a special organic disease is one of the most invidious and often most unsatisfactory duties which the veterinary surgeon is called upon to perform; and it is in connection with occult diseases, of the existence of which it may be reasonably presumed he had no knowledge, that the law bears so hardly upon the vendor of horses. Equally hard, it may be said, would it be on the vendee (were no such law in existence), if he had put into his hands at a large price, as a sound animal, one which was known to be suffering from some hidden, and eventually fatal, affection. It is just here that the law should step in and punish a man heavily (for fraudulence), who sold as a sound one an animal suffering from some undetectable defect of which he had a foreknowledge.

In this respect the French law of warranty is more just than ours, as it takes no cognizance of patent, but protects the vendee

from occult defects, though always with a reasonable limitation of time for detection, in favour of the vendor.

In the case of a Cardiac Hæmatoma, where distinct organization in some one or other of its parts can be detected, the period of existence may justly be laid down as one of some weeks or months; but it is utterly impossible, even here, that any arbitrary limitation can be made.

In the case of an *ante-mortem* clot, we have more reliable grounds upon which to base an opinion. If the clot is homogeneous, if it is non-adherent to the endocardium, if it is of sufficient size and in such a situation as to warrant us in saying that it could not have existed without producing unmistakable external evidence of its presence, then we may safely pronounce the opinion that its period of existence may be measured by hours. Mere cohesion, decoloration or resistance, are no guides, as we are all acquainted with the physical characters of fibrin which has been obtained in a few minutes by the whipping of fresh blood.

If, on the contrary, the clot is stratified, adherent (even in a small degree) to the endocardium, microscopically gives evidence of organization by the presence of vessels in its structure, and is so situated as not to interfere with the mechanism of the heart until it has attained a certain size,—we may safely extend our period of limitation to one of weeks.

ON THE TREATMENT OF GANGRENOUS AND SLOUGHING WOUNDS.

BY JOHN DOWLING ALLMAN, CREECHURCH LANE, LONDON.

THERE are few veterinary practitioners with any amount of practice, who are not frequently disappointed and sorely vexed with the difficulties they have to surmount in the treatment of gangrenous and sloughing wounds. There are numerous applications employed in the treatment of these troublesome and obstinate sores; but none has received so much attention as carbolic acid—not only in veterinary, but also in human

practice, as it has been very largely used in the treatment of all kinds of unhealthy wounds. Carbolic acid, after being held in high esteem as a remedy during a considerable period of time, has of late years passed almost into disuse,—and not without reason, as it has frequently disappointed those who employed it, and damaged the reputation of the practitioner. The circumstances which have determined this loss of favour are not difficult to discover, and will be exhibited in the brief historical sketch of the remedy which I intend to lay before the readers of the *Veterinary Journal.*

Professor Lister was one of the first who employed carbolic acid in the treatment of wounds; and there can be no doubt that if his scientific views could be carried out, the remedy would bear favourable comparison with any other known to professional and scientific men. But the rules which the Professor has laid down for his antiseptic treatment are too difficult, involve too much time, and would be impossible to carry out in any ordinary practice, as time and expedition are of importance in the present busy age. I believe the Professor has discovered this, and has consequently altered his antiseptic treatment of late.

His views on the carbolic treatment may be summarized thus:—When blood is effused into healthy tissues, it is absorbed, exciting no inflammation, suppuration, or fever. If, however, the skin is broken, so that the wound communicates with the air, the effused blood quickly decomposes, exciting both inflammation and suppuration. These phenomena are not excited by the air itself, but by the organic germs floating in it; so that if the air coming in contact with the wound can be freed from them, then neither putrefaction of the blood nor the consequent inflammation and suppuration can take place. Also, experiments show that if these germs are prevented from reaching wound or abscess, their granulations and walls will not form pus, but only a little serum.

Now, as carbolic acid will completely destroy these organic floating germs, he filters the air before it reaches the wound, with dressings saturated with this agent. Respecting contused wounds, he says: "All the local inflammatory mischief and general febrile disturbance which follow severe injuries, are due

to the irritating and poisoning influence of decomposing blood or sloughs." To destroy any septic germs already in contact with the lesion, Lister first washes the wound thoroughly with a watery solution of carbolic acid, containing, for contused wounds, one part of crystallized carbolic acid to twenty of water, and one part to forty for simple incised wounds. To prevent the subsequent access of septic germs, he covers the wound with a lac plaster,* extending freely beyond the wound at every part, so that the discharge may have to travel a considerable distance beneath the impermeable antiseptic layer. The greatest care is necessary in changing the dressing, especially with contused wounds. Inasmuch as the antiseptic injected into the wound on the previous day has become absorbed, the extravasated blood, and any portion of tissue killed by the violence of the injury, are as susceptible of putrefaction as if no such treatment had been pursued.

Lister, counselling adherence to the minutest details of his plan, observes that "experience leads him to believe that if, when the dressings are removed, a single drop of serum were to be pressed out by the movement of the limb, and then regurgitate into the interior, after being exposed even for a second to the influence of septic air, putrefaction would be pretty certain to occur." In re-dressing a wound he recommends "the employment of a syringe, the muzzle of which is inserted beneath the margin of the lac plaster, and as this is raised a stream of watery solution of carbolic acid (one to forty) is made to play upon the wound, till a piece of calico, soaked with the same solution, has been placed upon it." Any examination of the wound that may be desired is made with freedom through the transparent solution thrown over it by the syringe. Lister changes the dressing on the day following the injury; but afterwards the frequency of the dressing must be regulated by the

* This plaster is composed of a mixture of three parts of shellac to one of crystallized carbolic acid. This mixture is incorporated with a soft cloth, instead of being spread upon starched calico. It is thus rendered beautifully flexible, and at the same time much more durable. As in this form it is very thin, it is important where much discharge is anticipated, or where a long time is intended to elapse between the dressings, to use it in two layers.

amount of discharge. After the first day or two, he protects the wound from contact with the carbolic plaster, to prevent irritation of the delicate structures and the formation of pus. He says: "After the first dressing, the object I always aim at is to have the material in contact with the exposed tissues approximate as closely as possible to the perfectly bland and neutral characters of the living healthy tissues." The material placed between the wound and the carbolic plaster he terms "the protective." "It is essential that the 'protective' should be antiseptic at the moment of its application; otherwise there will be a risk of its communicating septic germs." The protective he employs is made of oiled silk brushed over with a mixture of one part of dextrine, two parts of powdered starch, and sixteen parts of cold watery solution of carbolic acid (one to twenty). The carbolic solution is used rather than the water, though not for its antiseptic property, but because it makes the dextrine apply itself more readily to the oiled silk, and the granular starch is used for a similar purpose.

Oiled silk thus prepared becomes uniformly moistened when dipped in a watery solution of the acid, so that all risk of communicating putrefactive mischief along with it is avoided. The "protective" must be everywhere well overlapped by the antiseptic lac plaster.

This treatment, Lister says, prevents, in some instances, suppuration in the cavity; the old stimulus being removed, and the new one of decomposing matter prevented. With small abscesses this favourable termination is indeed the rule; and with large and even enormous abscesses—psoac and iliac—but little fresh matter is formed; and the patient is thus preserved from the exhausting effects of an abundant and prolonged discharge. The dressings must be continued till the wound has quite healed.

So much for the scientific rules of the antiseptic treatment of wounds; and I have quoted Lister pretty freely, to show that if his views could be strictly carried out, no doubt the results would be favourable and conspicuous. But time is of importance to the veterinary surgeon, as he has many miles to go over in the course of the day, and many patients to examine; and if he

had to conscientiously carry out the Professor's rules in the dressing of wounds, I fancy he would be puzzled to accomplish the day's duties. Carbolic acid is likewise objectionable for general use, owing to its characteristic odour, as it is so well known and so largely abused by ignorant and unqualified persons in meddlesome quackery, to save the expense of the veterinary surgeon. One striking instance of the abuse of carbolic acid I heard of in the North a few weeks since. A friend of mine, a veterinary surgeon, was called to a case where a horse was attacked with sore throat. The owner of the horse, having some knowledge that carbolic acid was used in veterinary practice, thought it a desirable agent to have rubbed into the skin covering this part. What were the consequences? The poor animal must have suffered excruciating pain, as the acid acted energetically on the skin, producing opaque white patches, and excited active inflammation, followed in a few days by desquamation. The toxic effects of carbolic acid are characteristically described in the *Veterinary Journal* for April by "Nemo"; and in the same Journal Mr. T. D. Broad, F.R.C.V.S., Bath, gives an elaborate history of the use and abuse of this much-vaunted application.

Now, what is the best and most effectual remedy to be employed in the treatment of gangrenous and sloughing wounds? There are many in use, and several of them are infinitely superior to carbolic acid. For instance, there is the solution of chloride of zinc—a popular remedy with some eminent veterinary surgeons. I remember my friend, Mr. Harry Olver, M.R.C.V.S., Tamworth, showing me a case some months since of gangrenous wounds in the legs of a horse, that he treated with the solution of chloride of zinc, and the case did remarkably well on it. Then there is the tincture of calendula—a favourite application with many for sloughing and suppurating wounds. And another, which has of late attracted much attention, is the "Linimentum Saponis *cum* Myrrh et Benzoin." I am indebted for the formula of this latter application to my friend Mr. John Peele, M.R.C.V.S., Durham, who drew my attention to it a few years since. I had it prepared from his formula, and it is obtainable from Messrs. C. J. Hewlett and Son, veterinary wholesale druggists, Cree-

church Lane. It can be applied with marvellous success to gangrenous and ill-smelling sores, as it prevents the stench, acts as a stimulant, and improves the condition of the wound. For simple bruises and cuts, mixed with water (equal parts), it forms a beautiful creamy application. It can be used with the greatest safety, and is not likely to be detected by ignorant and officious stablemen, who are always ready to try and find out any celebrated lotion or liniment. So popular has this application become, that it will be found in almost every veterinary surgeon's pharmacy between Penzance and Newcastle. My views regarding this excellent remedy will be fully corroborated by some eminent practitioners; and notably amongst them I would mention my friends Mr. H. W. Thomas, M.R.C.V.S., Plymouth; Thos. Olver, M.R.C.V.S., Truro; H. Olver, M.R.C.V.S., Tamworth; E. Faulkner, M.R.C.V.S., Manchester; H. Peele, M.R.C.V.S., West Hartlepool, and Messrs. Hubbick and Peele, Durham.

THE *ŒSTRUS EQUI* OR HORSE BOT.*

BY D. S. BROWN, V.S., MONTREAL.

THE genus *Œstrus equi* belongs to the family of *Œstridæ*, a division of the order *Diptera*, or two-winged insects. The species of the *Œstrus equi*, as described by Bracy Clark, are as follows:—

First: *Œstrus equi* (*Gasterophilus* of others).

The fly of this species has opaque white wings with a golden tinge, a transverse black wave, and two spots near the extremity, a minute raised dot near the base of the wing. The abdomen is reddish-brown, with black spots and points. The legs are red. The female has a lengthened abdomen, curving underneath; abdomen of male obtuse. Found in meadows, laying its eggs or "nits" on the knees, mane, and sides of horses. The egg is white, oblong, pointed at one extremity, the other obtusely truncated, with a lid. The *larva*, or "grub," is barrel-shaped,

* Paper read before the Montreal Veterinary Medical Association, February 22nd, 1877.

tapering at one end and obtuse at the other, and is covered with a thick skin, beset with a double row of prickles round each joint, alternately placed. It is found in the stomach of the horse, to which it adheres by two short black hooks, one on each side of the mouth.

The *pupa*, or chrysalis, is oval, dark-red, rough, with prickly points. In spring or early summer they may be found on the stable floors, under the dung in the manure pit, or in the pasture fields, where they are covered by the horsedung.

Second: *Œstrus hæmorrhoidalis* (the Lip or Anal Bot).

The wings of this fly are without spot, and are of a brown colour. The face is white, with antennæ inserted in black pits or depressions; body thinly covered with hair; thorax greyish in the middle; abdomen black and shining, with base white and extremity orange-red; legs pale-red. It is found in meadows, laying its eggs on the lips of the horse.

The eggs are black, oblong, and with a *petiolus* or foot-stalk. The larvæ are white, with prickles like the former, but less and rounder. They inhabit the stomach of the horse. The pupa is reddish-brown, with small prickles round each segment.

Third: *Œstrus veterinus* (the Red or Breast Bot). This species has transparent unspotted wings. Body oblong, tapering, and covered with reddish-yellow hairs. The sides of the thorax and base of abdomen are covered with white tufted hairs. It is found in meadows. The larvæ are coral-red, oblong, and smooth-jointed; the last two joints are dark-red.

The Bot-fly considerably resembles the common honey-bee. The female has the abdomen lengthened, forming an ovipositor, which she carries curled in toward the feet. When depositing her eggs, she carries her body nearly vertical, suspends herself for a short time before the part on which she intends to deposit the egg; then, with a sudden dart, she glues it to a hair. She does not seem to alight, so quickly is the egg deposited. She then again poises herself near the part, prepares another egg, and deposits it in the same manner.

The egg has the shape of an oat-kernel (Fig. 1, *a*, *b*, *c*). The side of the smaller extremity is attached to the hair by a strong and almost insoluble glue. The shell, seen under the microscope,

is transversely striated, yellow, and almost transparent. The free or unattached extremity, in the perfect egg, is covered by a lid, which, on the application of moisture and heat, readily

FIG. 1.
The egg-case of the *Œstrus equi* attached to the hair: natural size.

falls off. This moisture and heat is usually supplied by the animal's tongue, in licking or biting himself. The larva is

FIG. 2.
Full egg of the *Œstrus equi*, enclosing pupa, the opercula being still *in situ*.

thus freed and at the same time roused; and in working itself out of the shell it comes in contact with the tongue or lips of

FIG. 3.
Larva of the *Œstrus equi* half extruded from the egg-case.

the horse, to which it adheres, and is thence conveyed with the food into the stomach.

Our president, Mr. McEachran, has in his collection a micro-

scopical preparation, in which some eggs of the *Œstrus equi* and their contents are beautifully shown. One of the eggs is entire. Another has its lid removed, but the minute larva is still contained within it (Fig. 2). Another shows the creature half out of the shell (Fig. 3); while another exhibits the empty shell (Fig. 4).

FIG. 4.
Empty shell or case of the *Œstrus equi*, with opercula removed.

The eggs of the *Œstrus hæmorrhoidalis*, besides having the petiolus or foot-stalk, is said to be black-coloured, which distinguishes it from the preceding.

The larva of the *Œstrus equi* is of a light coral colour, and is beset with a double row of spines between each two segments. The spines are fewer on the larvæ of the *hæmorrhoidalis*, and are said to be wanting on the *veterinus*.

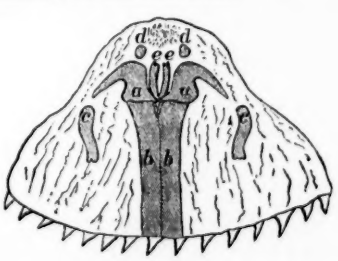

FIG. 5.
Head of the *Œstrus equi*: *a a*, hooklets; *b b*, œsophageal tubes; *c c*, inferior spiracles *d d*, anterior spiracles; *e e*, mandibles.

The smaller extremity of the grub is the head, which is furnished with two sharp hooklets (Fig. 5, *a a*), by means of which the bot adheres to the stomach. When these hooks are inserted, the bot is suspended without further exertion, as by two ordinary hooks, being itself attached to the handles.

It has been supposed that the bot has no power of relaxing its hold, when once attached, until fully matured. But that they have this power, Mr. Lyford and myself have fully proved—at least, to our own satisfaction. We repeatedly allowed them to attach themselves to our fingers, and in several instances they withdrew their hooks by their own effort, and of their own free will. Again, I noticed one attached to the cork of a bottle, in which I had several confined. The hooks, I noticed particularly, were fully inserted; yet, when I looked again, the bot was free. On the table, also, we observed them crawling for a short distance, becoming firmly attached to the cloth, and after a little time loosening their grasp and again moving on. We caused one to let go its hold in my hand by touching it with iodine. Another immediately freed itself on being held over the lamp. The last experiment did not kill the creature, for it again attached itself to my finger.

Between these two hooks is the mouth, furnished with minute mandibles, opening vertically. These larvæ have a definite digestive canal. This consists of an œsophagus, what appears to be a stomach, a distinct coil of intestines, and a rectum. I was, however, unable to find an anal opening, the rectum apparently terminating inside the lower margin of the end-plate.

The respiratory apparatus consists of a large number of bronchial tubes, all of which have their origin in a sort of air-box, just inside the scaly end-plate at the posterior extremity. The small tubes break up into minute ramifications in the red substance of the thick part of the body.

The two principal tubes extend the whole length of the bot, giving off numerous anastomosing branches, and terminating anteriorly, each in a spiracle, which seems to communicate with the exterior by a minute opening.

These larvæ have also a definite circulatory system, and a pulsating movement can be plainly seen on the superior part of the posterior extremity, just under the skin.

The life-history I take the liberty to give from Bracy Clark's essay:—"When the female has been impregnated, and the eggs sufficiently matured, she seeks among the horses a subject for her purpose, and approaching him on the wing, she carries her

body nearly upright in the air, and her tail, which is lengthened for the purpose, curved inward and upward: in this way she approaches the part where she designs to deposit the egg; and suspending herself for a few seconds before it, suddenly darts upon it, and leaves the egg adhering to a hair. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and poising before the part, deposits it in the same way. This is repeated by these flies till four or five hundred eggs are sometimes placed on one horse.

"The inside of the knee is the part on which these flies are most fond of depositing their eggs; next to this the sides and back part of the shoulder; and less frequently on the extreme ends of the hairs of the mane. But it is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue; and the ova, therefore, are always scrupulously within its reach.

"The eggs thus deposited I at first supposed were loosened from the hairs by the moisture of the tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched: but on more minute search I do not find this to be the case; or at least it is only by accident, for when they have remained on the hairs four or five days, they become ripe, after which time the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent larva. At this time, if the tongue of the horse touches the egg, its operculum is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is thence conveyed with the food to the stomach. Here, as its growth advances, it becomes thicker and broader, and beset with bristles. They are very frequent in horses that have been at grass, and are in general found adhering to the white insensible tissue or coat of the stomach. They usually hang in dense clusters on this white cuticular lining of the stomach, and maintain their hold by means of two dark-brown hooks, between which a longitudinal slit or fissure is seen, which is the mouth of the larva. By its hooks the bot can remain firmly fixed for any

length of time, as at anchor, without requiring any further exertion.

"These bots, as is also the case with two or three other species, pass the autumn, winter, and spring months in the stomach, and arrive about the commencement or middle of the summer at their full growth, requiring a twelvemonth fully to complete their structure."

On the *Œstrus hæmorrhoidalis*, or Anal Bot, he says:—"The part chosen by this insect on which to lay its eggs is the lips of the horse, which is very distressing to the animal from the excessive titillation it occasions. The horse endeavours to avoid it by galloping away to a distant part of the field; and if the fly still continues to follow and tease him, his last resource is the water, where the œstrus is never observed to pursue him.

"When several of the flies are confined in a close place, they

FIG. 6.
Mature Bot, about the natural size.

have a particularly strong, musty smell; and I have observed both sheep and horses, when teased by them, to look into the grass and smell it very anxiously; and if by these means they discover the fly, they immediately turn aside and hasten to a distant part of the field.

"The eggs of this species are difficult to be seen on the horse's skin or beard, owing to the agitation of the beast, and from the colour of the egg being dark, like that of the skin of the horse. I ascertained, however, its form by pressing one of these eggs from the abdomen.

"The larva or grub of this species inhabits the stomach, like the former, generally adhering to the white lining, and is disposed promiscuously in dense clusters, in the same manner. They may, however, be distinguished from them by being in general smaller and longer in proportion to their bulk. The

larva of this species may be obtained from almost any horse that has been much at grass during the preceding year, and exposed to these flies, and will be found during the summer months sticking more or less within the verge or opening of the anus, adhering to its soft lining, and producing considerable irritation and uneasiness."

Professor Gamgee thinks that this adhering to the rectum and anus is habitual with all species, and he says that "the adhering to the anus would seem to be a natural and habitual act, destined to allow time for development of the faculty to creep. The larva in this position possesses little power of movement, and has a tough shell-like appearance. But exposure to the atmosphere seems very soon to excite it to move. It is, however, endowed with active locomotive power for only a short time—probably only for the day of its exit, so as to afford it means to attain a secure hiding-place in a bank or other favourable retreat. I have often seen the grub on the floor of a stable, moving towards the side so rapidly, and in such an outstretched manner, that at first sight it could not be recognised.

"The bot," he continues, "is next found in the form of a chrysalis, the skin becoming shell-like, and retaining the shape and form of the grub as it issues from the horse's intestine, only acquiring a reddish-brown colour. The further metamorphosis in the state of the chrysalis is completed by the eighteenth or nineteenth day. The fly escapes from the narrow end representing the head of the bot, and invariably issues—fully formed and powerful on its wings and legs, and covered with down—at an early hour in the morning, varying with the time the sun rises, from three to five a.m.

"My plan for observing these points," he says, "was to inclose the larvæ, as I removed them from the anus, in thin glass jars covered with gauze; and I have always seen the fly born on the eighteenth or nineteenth day. The activity of the bots in my spontaneous *vivarium* was very great, and with a buzzing noise they moved about and then rested, and were especially vigorous and loud in their buzz as the day advanced. In a state of nature, this is a provision to ensure the approximation of the sexes and fecundation of the ova."

When the ova are fecundated the round of existence is completed.

As to the effects of these parasites on the animal economy, great diversity of opinion still exists. Many have supposed them to be rather beneficial than otherwise, and among these is Bracy Clark. Some have gone even so far as to assert that they are really useful, as they help to triturate the food in the stomach, and thus aid digestion. Others, among whom is Dr. Dadd, assert that under ordinary circumstances they are neither useful nor injurious; while others consider them to be injurious at all times, and that the extent of their influence is in proportion to their number and location. Among those who hold the latter opinion are Professors Williams, Gamgee, and Mayhew.

Some claim that these parasites are injurious only when occurring in such large quantities as to obstruct the passage of aliment.

Professor Law says that when they are situated on the cuticular part of the stomach they do no harm, except that when in the cardiac orifice they obstruct the passage of food, and when in the throat they cause chronic sore throat, which continues until the following spring, unless the bots be removed. "And above all," he says, "when very numerous, and attached to the highly sensitive right half of the stomach, or the duodenum, they seriously interfere with digestion, causing the animal to thrive badly, to be weak and be easily sweated or fatigued, and even determining sudden and fatal indigestion." He also says that they are very injurious when, in passing along the alimentary canal, they become attached in their course.

My own opinion is that these parasites cause more derangement in the animal economy than most professional men seem willing to admit; yet, perhaps, not so much as they who would refer everything to them suppose.

It seems that they can hardly be otherwise than injurious when present in such numbers as we so often find them. And when occurring in fewer numbers, they must be injurious, from their very mode of attachment. If we allow one to attach itself to the palm of the hand, the irritation will be found consider-

able; and can we say the horse's stomach is less susceptible to the same irritation?

I have assisted in the examination of at least a dozen stomachs during the present school-session, and many of them for the sole purpose of noticing these parasites. In all but one of these stomachs the bots were found, and in all but two there were two patches—one on the cuticular part of the stomach, the other in the duodenum, just outside the pylorus. In one case they were scattered promiscuously.

Some argue from the very general occurrence of the bots that they must be useful rather than injurious. These might as well argue that, from the tape-worm being so universally present among Abyssinians and Icelanders, these parasites are useful.

It is generally taught that the bots have no mandibles with which they can gnaw. But if not, the hard plates on each side the mouth, and already referred to, are very deceptive. If they have no means by which they can dig or bore, how is it that they are so often found in deep pits in the walls of the stomach?

Those of you who assisted in the *post-mortem* examination of the horse taken to the mountain park early in the session, will doubtless remember the appearance of the stomach. In it the usual two clusters were found, and in each quite a number were discovered more than half imbedded in the stomach or duodenal walls, and in pits which they themselves must have excavated; for they were so thickly covered with mucus that they could not have been the result of *post-mortem* digestion. Besides, there were no signs of *post-mortem* digestion elsewhere in the stomach.

So, from this and other similar observations, I am inclined to believe the statement of men who "have seen the heads of the bots sticking through the stomach walls."

I think, however, that it is seldom that these larvæ undertake this mode of progression—or at least to such an extent—while their host is alive and healthy.

Further, I believe that in many debilitating diseases, where the natural functions of the stomach are impaired, these parasites, by becoming uneasy and moving their free extremities, boring deeper into the stomach walls, or loosening their hold

and re-attaching themselves, thus become severe irritants, and prove serious hindrances to the successful treatment of many of our patients, even if they are not primarily the cause of many fatal diseases.

Symptoms.—The symptoms are not usually distinct from other forms of indigestion, or those caused by other entozoa. The previous history of the case must be thoroughly inquired into, and well considered: this, in fact, being nearly the only means we have of judging of the presence of bots. If the animal has during the previous bot-fly season had a run at grass, and has symptoms of serious indigestion, with occasional nausea, or a depraved appetite, I think it safe to call it "bots," especially if we do not know what else to call it.

Treatment.—The best treatment is undoubtedly prevention. If the animal is having a run at grass during the bot-fly season, the "nits" should be removed from his hair at farthest every second day. But in case of a large number of colts, of course this would not be practicable.

Professor Law thinks it highly probable that vermifuges, such as Male Shield Fern, followed in the usual manner by a brisk cathartic, if given as soon as the bot-fly season is over, and before the larvæ have attained their thick skin, may effectually remove them.

Mr. Lyford, our fellow-student, in experimenting on a horse at the college here, with carbolic acid, under the direction of Professor McEachran, commenced by giving two-drachm doses in bolus of linseed meal three times the first day. The doses were doubled the second day; and on the third he gave four ounces of the glacial acid. The horse was not noticeably disturbed. The animal being killed for dissection on the third night, the stomach was examined and found but slightly affected by the acid. It was observed, however, that most of the bots—and there was a large quantity of them present—were loose, and some of them had passed as far as the posterior part of the jejunum.

Probably if a brisk cathartic had been administered, large numbers of them would have been expelled.

The experiment is at least well worth completion.

"BURSAUTTEE."

BY "UBIQUE."

THE remarks by "Max" in the November number of the *Veterinary Journal*, and those by Mr. Knott in that for March, have induced me to endeavour to give my own impressions with regard to this malady.

The question is asked almost every day, "What is Bursauttee?" and just as frequently the same answer is given: "We don't know." We know how the disease shows itself: viz., by ulcers with indurated margins, which attack various parts of the body —such as the angles of the mouth, abdomen, joints, penis, etc.; and we know, to a certain extent, the best measures to take with a view to effecting a cure; but with respect to what the cause of the affection is, or in what way it is produced, I do not think we are acquainted. I cannot, from my own experience, go so far as to say that this disease is caused by an over-abundance of acid in the blood, or that it is analogous to Syphilis or Scrofula; but I hold the opinion that it is a blood disease peculiar to the hot season, and of such a nature that it renders the skin, and mucous membrane where it most approaches to the nature of skin, unduly disposed to chancrous ulceration; and that a slight wound or abrasion is a sufficient exciting cause, in some instances, to produce it. It must not, however, be supposed that it is absolutely necessary to have a wound or abrasion—the disease being frequently papular in its origin. Nor must it be supposed that it is peculiar to the rainy season alone. At the present time (30th April), there are in my infirmary three cases of chancrous ulcers, between which and those of the rains no external difference can be distinguished. I have always looked upon "Bursauttee" as essentially an affection of the hot season—that is, including the rains.

Dr. Fayrer's explanation of "Delhi Boil" appears to me the most rational one that has yet been given of "Bursauttee"; and I think his theory of abnormal cell-growths, with subsequent degeneration, the most probably correct one yet advanced.*

* See the *Veterinary Journal* for November, 1876, p. 362.

The symptoms by which this disease may be known have been so well described in other papers on the same subject, that I need not enter into them. It may, however, be as well to mention a difference between the ulcers on the penis and those affecting other parts. Those on the fetlocks and other joints generally assume the character of chancres with indurated margins, discharging a thin sanious fluid, and causing little or no surrounding swelling; but those on the prepuce and *glans penis* frequently have a tendency to run into one another, and produce enormous tumefaction of the parts adjacent by infiltration into the cellular tissue. I have now under treatment one of these cases, in which the prepuce and *glans penis* were attacked, about a month ago, by small spreading ulcers--papular in their origin, and which rapidly coalesced and caused the glans to have an appearance like one large ulcer. This case is now rapidly improving, but the whole of the parts are greatly thickened.

No hard-and-fast line of treatment can be laid down for this affection. For my own part, I employ several remedies; when one becomes inert I adopt another, and so on. But one method has lately been attended with considerable success, and this is simply the administration of iodide of potassium until the system becomes completely under its influence. Arsenic is a good internal remedy in slight cases; but the Potass. Iod. in small doses every day, with green food and occasional aperients, combined with the use of the iodide of iron externally, is, in my opinion, the best system of treatment in severe cases. After the ulcers are healed, a mild iodine ointment will generally remove any induration that may remain. Slight cases may be treated by carbonate of magnesia and powdered charcoal externally, with arsenic internally, and a diet of green food. McDougall's disinfecting powder is very useful as a dressing, and sprinkled about the stable is invaluable for keeping away flies.

I quite join with "Max" in decrying the barbarous remedies adopted by some amateurs in treating this affection. Nothing is more revolting than to hear these matters spoken about as if a horse were so much wood, to be operated on with knife and firing-iron; and it rests in a great measure with professional

men to put an end to such pernicious twaddle, by showing that the disease is amenable to mild remedies judiciously applied.

That we have yet a very great deal to learn regarding "Bursauttee," no one will deny; and the man who discovers its true nature and the means to prevent it will confer a lasting benefit on horse-owners and others in India. For, without exception, this abominable pest is the greatest nuisance, both to horses and their masters, that could possibly be. Change of climate has been recommended, both as a curative and a preventive measure; but it is not always possible to try it—that is, if one wishes the affected horse to remain one's own property—as it requires what most of us would like to have (viz., a long purse); but unless some very cool place were selected, I doubt whether good results would ensue, as the disease is known throughout the plains of India, and hill stations are not suitable for horses in large numbers.

PUNCTURE OF THE INTESTINE IN FLATULENT COLIC.

BY J. C. BERNE, M.R.C.V.S., ROYAL ARTILLERY, MADRAS.

I WAS very much interested in the paper of Mr. Harthill, V.S., Louisville, Kentucky, under the above heading, which appeared in the March number of the *Veterinary Journal.*

It affords me now much pleasure to give you the particulars of a case of Tympanitis, which I have had lately under treatment, and the successful termination of which I ascribe to the operation in question.

On the 18th of April, at about 2 p.m., a case, described by the farrier as Colic, was admitted to the sick lines. The usual treatment in those cases was carried out by him; but as no improvement was manifested after the lapse of nearly three hours, I was sent for. The patient was a dark chesnut "Waler" gelding, five years old, in rather low condition. His symptoms were: pulse 80; mucous membranes very much congested, approaching to a purple tinge; temperature, as far as I could make out without the aid of a thermometer, normal; pupils un-

affected; great uneasiness—walking round the box; when at rest looking round at both flanks, and standing in a semi-crouching position, the off hind-leg being partly drawn under him; eversion of upper lip from time to time; tympanitis well marked in both flanks, but the right iliac region was the more prominent, and a clear resonance followed percussion on either side. The rectum was cleaned out, and a pint and a half of urine, or thereabouts, drawn off by cathether. A dose of physic in solution was given, and turpentine enemas were thrown up at intervals. At 8 p.m. no improvement; received Tinct. Opii. ʒij. in water Oiss.; stimulating liniment well rubbed into abdomen, and the turpentine enemas ordered to be continued.

19th. No change. Received Ammon. Carb. ʒiss. in bolus; clysters as before. 5 p.m. Patient *vomiting*. Determined on puncturing the intestine as the only chance of saving the horse's life. Twitch put on, and strapped up near fore-leg. The point I selected for the puncture was three inches and a half to the antero-inferior part of the anterior spine of ilium, off side. The reason for my selecting this particular place was because of its greater prominence.

Of course the distension of the intestines altered their relative normal positions, but in this instance it was the cæcum that the trocar entered. All, then, being ready, I cut the hair closely from the part, and divided the integument with rowelling scissors; so that little force was required to drive the trocar and cannula into the distended viscus.* The trocar being withdrawn, the imprisoned gas rushed out with a sort of hiss, through the narrow tube of the cannula. Quickly the abdomen was restored to its normal dimensions, and the cannula withdrawn. It is said that to be relieved from pain is the happiest sensation an animal can feel; and the sigh of relief which my patient gave as the offending gas was expelled was indeed highly suggestive.

A wet cloth was placed over the loins, and a bucket of water, having Pot. Nit. ʒij. dissolved, left with him for the night, with orders to give more if he required it.

* The dimensions of the trocar and cannula used were—trocar 2½ inches long, cannula 2 inches long. Diameter of latter, $\frac{5}{12}$ths of an inch.

20th. During the night vomited twice; no desire to eat, but drinks a good deal; mucous membranes still congested; pulse 72; continue nitrate of potash solution. 5 p.m. Thirst rather increased; mucous membranes less congested than at my morning visit; dunged during the day—fæces soft. The excessive thirst I looked upon as unfavourable: ordered Tinct. Opii. ℥ij. in water Oiss., and to have a bucket of linseed "congee" placed in his box.

21st. Bowels acted freely during the night—dung soft; inclined to eat; thirst less; pulse 64; continued linseed congee. 7 a.m. Received Tinct. Opii. ℥ij. in water, as before.

22nd. Greatly improved. Mucous membranes natural; pulse 52; bowels and kidneys acting satisfactorily; wound on flank nearly healed. It will not, however, have been by the first intention, as I noticed this morning a drop of pus between its lips. Touched wound with Cupri. Sulph.; solution of Pot. Nit. as before, and let him have as much grain and linseed congee as he cares for.

23rd. Appetite good; bowels and kidneys acting naturally and well; pulse 48. Same treatment as before, with the addition of an hour's exercise morning and evening.

The diary of the case continued thus satisfactory to the 26th, when he was discharged cured. Indeed, he might have been sent out of the hospital stables some days earlier, for he was in full health and spirits on the 23rd; but the small wound on the flank was rather tardy in healing, and I was unwilling to discharge him till the process was complete.

From the passive way in which this horse stood during the operation of dividing the skin and puncturing the intestine, I believe now the use of the twitch and fetlock strap to have been unnecessary. At the same time, I think in all cases of this sort it would be as well to put them in requisition.

With reference to this case, I may observe that from first to last there was no return of the abdominal swelling, and, with the exception of the great thirst on the day succeeding the operation, its progress, from the time of puncturing to the discharge of the patient, was very satisfactory. I confess I looked on the great thirst with a certain amount of alarm, regarding the

symptom as foreshadowing Peritonitis; hence the exhibition of the Tinct. Opii. But whether it was that my fears were groundless, or that the medicine warded off the anticipated danger, I am happy to say the course and ending of the case realized my most sanguine wishes. Humanly speaking, I can state confidently that this horse's life was saved by the operation.

Cases of Flatulent Colic, I am glad to say, are not of frequent occurrence in my practice; but when I meet with another, presenting symptoms like the one under notice, I shall have no hesitation in pursuing the same line of treatment as was adopted in this instance. Remembering the little encouragement—we need not stop to ask the reasons—that this operation has met with in our professional literature, it will, I presume, be admitted that Mr. Harthill deserves our congratulations, not alone for the *acumen* which distinguished the management of his cases, but also for his professional *esprit* in allowing us to have the results.

VETERINARY OBSTETRICY.

BY W. A. COX, M.R.C.V.S., ARDWICK, MANCHESTER.

(*Continued from* vol. iv., p. 181.)

Obstruction of the Os Uteri by increased and morbid secretion.—This is not frequent, and is found in all animals. A cow belonging to Mr. T. Sides Mill was presenting parturient pains; examination showed the cervix completely blocked by a tenacious substance of considerable bulk. It was removed in pieces, some as large as the hand; and showed its elasticity by being drawn into strings many inches in length. When thrown on the floor it was with difficulty removed. This animal had exhibited gradually increasing pains for sixteen or eighteen hours, without any progress being made. Several hours after the removal of this substance, the *os* was sufficiently dilated to allow the hand to be passed, when the calf, felt through the membranes, was found in position. In the course of eight hours she calved without assistance. The adhesive power of the secretion was so great that I am convinced that delivery would not have been accomplished without its removal.

Another, and somewhat peculiar case occurred, that will be as well to mention, as I had at the time two pupils, who had been with me a considerable period, and were well experienced in most obstetric cases, and both were mistaken in their diagnoses. Mr. H. Y——, of North Brailsford, sent, during my absence as evidence on a horse case, requesting attendance on a heifer that "pained" herself as if to calve, but without any external appearance. My pupils visited her, and reported to me on my return that it was a case of Gravid Uterus or Abscess, and that she was not pregnant, although the owner averred she had been served, and he had not afterwards observed any œstral period. They had recommended him to have her slaughtered. Being in the neighbourhood a few days afterwards, I called, and found that the uterus, with fœtus *in situ*, had been kept for my inspection. It was of considerable volume, and had been laid open by a single incision which extended through the fœtal membranes. The walls of the uterus were thickened by an effusion of fluid between the coats, as it were, of the fœtal membranes; and between them was a large bulk of semi-organized fluid, the *liquor amnii* especially being greatly increased, five or six inches in depth, and having the appearance of yellow jelly. The fœtus was perfectly formed, but very small, and lay in the centre of this morbid mass; the bulk of matter surrounding it had quite prevented any detection of its presence. Had the fœtal membranes been ruptured and the mass removed, the diseased condition of the uterus would have precluded recovery.

I read in Mr. Gray's paper (*Veterinary Journal*, vol. iv., p. 253) that he finds it difficult to incise the fœtal abdomen in cases of Ascites. This does not occur with me; but I make it further back than he states, finding no difficulty in getting far enough; and the *curved* knife is much superior to the straight one, as it penetrates much easier, and is passed through the vagina with less risk. I have tried the trocar and cannula, passing it as he suggests; and from some cause, probably the pressure of some of the abdominal viscera against the orifices, I never found it to work successfully, and have consequently ceased to use it.

(*To be continued.*)

OBSCURE CASES OF SCROFULA IN CALVES.

BY JOHN W. HILL, M.R.C.V.S., WOLVERHAMPTON.

On the 10th of July, 1875, I was requested to visit a pedigree heifer calf, six months old, the property of A. C. Twentyman, Esq., of Castlecroft, which was described to me as making a peculiar roaring noise in its breathing. This I found it unmistakably did, the sound being a facsimile of that emitted by a horse affected by roaring when going up hill; but it was equally loud whether the animal was stationary or moving. The nostrils were dilated and the cheeks blown out in respiration. The throat on either side was enlarged, and sensitive to pressure. Auscultation revealed no chest affection; and indeed it was palpable to an ordinary observer that the malady was purely local and confined to the region of the throat. I considered it a case of Acute Laryngitis, and ordered the patient to be placed under cover, hot fomentations to the throat, and a saline aperient.

On the 12th its companion, another pedigree beast of the same age, purchased at the same time and from the same place, was observed to be similarly affected.

On the following day I visited them both; the former was no better, and the latter was equally bad. Both were kept under cover, and I dressed the throat of each with Hyd. Biniod. ointment 1 to 8, ordered sloppy, nourishing diet, and prescribed tonics, chiefly iron. For three weeks they neither of them made any progress: on the contrary, the noise in breathing continued and increased in sound, *but without any cough.* (This somewhat puzzled me, as it was evident the pressure on the larynx was very great.) They had become considerably emaciated, and cared little for food. In a few days they were turned out again to grass.

On the 9th August I called to inquire after them, when I observed they were both discharging profusely from the nostrils, but no abnormal sound was present. I was informed by the bailiff that the discharge had suddenly commenced, and that with it the noise had as suddenly ceased. In short, abcess had

formed and broken, and was being evacuated through the nostrils. The discharge continued for nine or ten days, at the end of which time they were not further troubled about.

The former, however, remained until the last seven or eight months of its life a puny, miserable-looking beast, while the latter grew and thrived amazingly.

Now for the sequel. On the 7th of May last, I received a note requesting me to call and make a *post-mortem* examination of the first-mentioned patient, which the bailiff had found that morning dead. On opening the body, the sight presented to view of scrofulous deposit was simply extraordinary, for, as the butchers would express it, "the beast was 'graped' from end to end."

Both lungs were adherent to the walls of the chest, and literally covered with tubercle. A similar deposit was also observable within their structure, but exceedingly limited (hence the non-detection of thoracic disturbance during the throat ailment). The heart and its sac were similarly affected, the latter being extensively thickened, and covered with scrofulous deposit hanging in clusters (grapy). The spleen was loaded with it, and rotten; the mesenteric glands were also extensively diseased.

The deposit in every part was of a like nature—cheesy and gritty.

I thought this would be a good opportunity for examining the throat as to the illness of 1875. The skin on that part was therefore removed, and the enlarged condition of the parotid glands at once led me to suspect the seat and nature, from the condition of the other organs, of the disease. These glands were dissected away; and on making a section, the resistance offered to the knife was of a gritty or gravelly nature, and exceedingly hard. On dividing them, the same scrofulous deposit was found to exist,—and to such an extent in the left one that scarcely a particle of the original texture was apparent. Here, then, lay the secret of the supposed Laryngeal Inflammation. A scrofulous diathesis: not improbably due to the animal's high blood, and possibly a near relationship, if not hereditary.

The most singular part of the case is, that during the latter seven or eight months of its life the animal suddenly commenced

to thrive, and no cough or indisposition * was ever observed from that time to the date of her death.

To-day, the 7th of June, I have examined the fellow beast. I find a little parotid enlargement on the left side of the throat, and dulness over the lower part of the left lung, with general increased respiratory murmur on the right side. Otherwise she looks well, feels well, and is a fine beast. She is now near her calving, but Mr. Twentyman has wisely decided not to rear the calf, or to again breed from her.

I have one other little circumstance of interest to mention. From the deposit in the parotid gland of the first one, I inoculated in the forearm and thigh a kitten. An enlargement the size of a pigeon's egg has formed on the arm, and discharges a thin ichorous matter; the creature has become extremely emaciated, but so far feeds well. He refuses, however, to play with his companions, is continually sleeping, and the breathing is short.

* * * * *

On the 15th inst. I destroyed the kitten, and found the following conditions on making a *post-mortem* examination. In both lungs tubercle was thickly deposited. The liver was studded with it here and there. The spleen was loaded with it in the form of shot-like eminences externally. The mesenteric glands were enlarged and inflamed.

Three medical men of this town, and Dr. Burdon Sanderson of London, have inspected the body.

It may be observed that, as I am told, perhaps the kitten had tubercle previous to the inoculation; but of this I am convinced to the contrary, as I selected the strongest and healthiest of the litter, and without the slightest sign of disease.

Again, it may be said that the same condition would result from any blood-poisoning. Not so; for here we have an identical reproduction of the heifer's malady—to wit, Scrofula, —and in a marvellously short period, being only five weeks between inoculation and death, when, to judge from appear-

* She at times went alternately stiff in her limbs—due, no doubt, to the affection being located in the joints, and giving a semblance of Rheumatism.

ances, the deposit had been present in the parts for some time. Opportunity permitting, I intend carrying the experiment a stage or two further.

[The inoculability of Tuberculosis has been so frequently demonstrated, that there can now be no doubt whatever as to the fact of this disease being so transmitted, even to carnivorous animals. Viseur, of Arras, and others, have even gone beyond this, and produced the malady in healthy animals—cats, etc.—by feeding them with tuberculous matter.—ED. *V. J.*]

THE TRANSVERSE POSITION OF THE FŒTUS DURING PARTURITION.

BY T. HOPKIN, M.R.C.V.S., MANCHESTER.

AFTER reading the editorial remarks in the *Veterinary Journal* for June on the subject of "Transverse Presentations," appended to Mr. MacGillivray's communication, and the statement that Professor Goubaux was still in doubt as to their occurrence, because not as yet seen, I take the liberty of offering a few particulars of a case of this kind that I think admits of no doubt.

On May 13th, 1875, at five a.m., there was brought to my establishment a mare supposed to be suffering from Colic. She was in foal, but her time was not expired by some three or four weeks. I soon discovered that she was not affected with Colic, but was suffering from the slow peculiar pains that generally occur when the fœtus is not right. After some time she lay down, and unmistakably strained. Upon examining her *per vaginam*, I found the *os uteri* to be moderately dilated, but the genital canal was dry and harsh. The placental membranes being ruptured, a little fluid escaped, and then I assured myself that I had a transverse presentation to deal with—my hand coming in contact with nothing but the ribs of the fœtus. A careful exploration being made, the young creature was evidently fixed in the position delineated in Fleming's "Text Book of Veterinary Obstetrics." It was lying on its back, with the legs

flexed on the abdomen—the anterior limbs being towards the left flank of the mare, and the posterior towards the right flank; the tip of the tail, between the stifles and resting on the belly near the umbilicus, assisted me to ascertain the real position as much as anything, though the case was a puzzling one.

As to the way in which I eventually contrived to turn, and finally remove the foal, I need not here mention; neither is this necessary in order to prove that *we can have* transverse presentations "dans les grands femelles," etc. I may state, however, that the manipulations and manœuvres which had to be resorted to before delivery could be effected, quite supported the opinion I had formed as to the kind of mal-position I had to deal with.

Unfortunately, during the operation of extraction, the labour pains were so severe that the mare fractured the *os innominata* on the right side—the crack being heard quite distinctly,—and when she was got on her legs again after the removal of the foal, our apprehensions as to the nature of the accident were discovered to be only too well-founded.

I may add that the head of the foal was bent round to the left shoulder. I was very busy at the time, and neglected making careful detailed notes of the case, but merely kept a record of its main features.

RUPTURE OF THE ABDOMINAL MUSCLES DURING PREGNANCY.

BY J. B. MARTIN, M.R.C.V.S., ROCHESTER.

A VERY interesting case of rupture of the abdominal muscles during pregnancy has recently occurred in my practice; and as I have reason to believe that the accident is very rare—at any rate, it is the first of the kind that has occurred in my experience—perhaps a brief reference to it may be worth a place in the *Veterinary Journal.*

I was hurriedly sent for to attend a bay cart-mare, eleven years old, and in foal. When I arrived I found her "waddling" about in a meadow, with the abdomen nearly touching the ground,

and the mammæ or teats discernible low down, and more in the middle of the belly than towards the inguinal region. The mare could scarcely walk, but did not exhibit any indications of pain,—although the abdomen was so sore that she evinced much uneasiness when it was touched.

On examining the animal *per rectum*, the fœtus could not be felt; it had sunk completely out of reach. On exploration *per vaginam*, no signs of foaling were discovered, and the *os uteri* was quite closed. The mare presented a very peculiar appearance,—the great pendulous abdominal mass nearly touching the ground, and the flanks on each side hollow and almost in contact.

I diagnosed the case as one of ruptured abdominal muscles, with Hernia of the gravid uterus, and probably also of a portion of the abdominal viscera.

The prognosis was so serious that I hinted at the advisability of having the mare destroyed; but the owner determined to give her a chance, so we decided to wait patiently until the time arrived for foaling, before attempting to assist her. In order to relieve her of the immense weight and inconvenience of the pendulous mass, she was placed in slings. These prevented the foal dropping lower. A dose of physic was administered, and instructions given to watch the mare closely, and inform me when she began to foal.

In two days a message came that the mare was down and straining very severely. I attended as soon as possible, and found her straining as stated, and exhibiting symptoms of great pain. On vaginal examination, the foal's feet could just be felt; but the head was bent down between the fore-legs, and only the top of the neck could be reached. The feet were with much difficulty secured by means of cords, and partially extracted, but the position of the head prevented further progress. After some time, and with great labour, hooks were placed in the orbits, but when pulled at they gave way, as the foal had evidently been dead for some time, and was somewhat decomposed. The hooks, however, were retained in the flesh. The feet were pushed back, with a view to endeavour to bring the head into a proper position, but without success,—and during

the manipulations the mare made a few violent struggles and expired in great agony. With great exertion we extracted the foal, which was a very large one. A *post-mortem* examination was made, when it was found, as anticipated, that the abdominal muscles had all given way. What with the age of the mare and the weight of the foal, the muscles could not stand the strain; they consequently ruptured and allowed the gravid uterus to pass through. So that it would have been quite impossible for the animal to have foaled without assistance; and even if she had lived she could not have been of any possible use.

[Might not gastro-hysterotomy have been attempted in this desperate case?—ED. *V. J.*]

THE ROYAL COLLEGE OF VETERINARY SURGEONS.

FROM the proceedings of the Royal College, which appear in another part of the *Journal*, it will be seen that Sir Frederick Fitzwygram has been re-elected President for the ensuing year—being the third consecutive year in which he has held that office; and we feel certain that the profession will heartily applaud the action of the Council in the very unusual course it has adopted, of again electing a President who has already occupied the chair for two succeeding years. The circumstances have undoubtedly warranted the Council in taking this exceptional step,—for it has perhaps never before happened in our history that the presidential chair has been so well and so worthily occupied; and the great and important measures which have been inaugurated and carried so far into successful operation, since Sir Frederick honoured us by assuming the Presidency, yet require watching and consolidation. The labours begun and conducted with so much earnestness and vigour have yet to be brought to a fitting termination; and no one could so satisfactorily accomplish this as Sir Frederick, whose business qualifications, judgment, influence, impartiality, and energy, render him peculiarly competent for the task. For the first time since the profession was incorporated, the whole of its members in the three kingdoms have this year had an opportunity of voting for Councilmen; and we have no doubt whatever that those who have been so elected will value the great trust reposed in them, and to the utmost of their ability and convenience endeavour to carry out its duties.

The responsibility imposed on the profession in this respect is not light; but if it is determined to elect only those who have already well, disinterestedly, and faithfully served it, or who are in a position to afford it further service, and are likely to promote its best interests, irrespective of schools or coteries—then we have no fear for the result.

Editorial.

EXPERIMENTS IN CONTAGIOUS DISEASES.

THE experimental method of investigation in physiology is generally acknowledged, by biologists and others, to have conferred great benefits in discovering or establishing facts relating to this important science; and few, we think, will be found to deny that the same method applied to pathology has thrown, and will continue to throw, much light on morbid processes, and, in leading to a better understanding of these, will vastly promote the science of therapeutics. For now many years the experimental method has been adopted in investigations into the transmissibility of contagious diseases in animals, either of the species to which the disease was limited, or to other creatures more or less susceptible to its influence. These experiments have had for their object either to prove the contagiousness of the malady—the potency of its infecting element—the modes by which the infection could be conveyed to healthy animals, the channels by which it could obtain access to the living organism, its period of latency and mode of development, the symptoms—varying or constant—to which it might give rise, the pathological alterations produced by the artificially transmitted malady, and other points of more or less moment to the student of disease or sanitation. The history of medicine offers many illustrations of the benefits which have been derived in this way, and in our own science we are indebted for much of our knowledge of contagious diseases to experimentation; while we must continue to look forward to this method to aid us when either our powers of observation are at fault, or our judgment is wavering. Baglivi says, "*Medicina tota est in observationibus*," and this is so far true; but cases often arise in medicine when observation fails us to a greater or less extent, and when it is necessary to demonstrate experimentally what is otherwise obscure or doubtful. But this demonstration is not always easily accomplished; on the contrary, it is often most difficult and uncertain. In the artificial transmission of a contagious or infectious malady, we do not always know the conditions upon which its successful conveyance depends; and even when we do know, we cannot always control those conditions. In "Veterinary Sanitary Science and Police" (vol. i. p. 187), we have pointed out that the extension or transmission of a contagious disease demands four conditions which are absolutely indispensable. These are: (1) The presence of the infective agent or virus; (2) Its integrity or potency; (3) Its contact with living tissues; and (4) Its absorption. The animals to be infected must also be in a condition to receive the contagium, for every one may not become affected; indeed, nothing is more striking in these diseases than the aptitude to receive them, or the immunity from them —a condition that does not always exist in the same animal, which may resist repeated attempts at infection, and at last become diseased. There is also the mode and the channel by which the poison may be

introduced, as well as the species of animal, and other considerations which we fear are only too frequently not known, or are overlooked by those who attempt the experimental method.

Hence it is that we have the most serious errors committed, and hence it also happens that we have the conclusions hurriedly drawn from the negative results of experiments, brought into direct opposition to the experience derived from every-day observation. We have more than once pointed out the great danger of drawing conclusions solely from negative results in experimentation, and particularly when observation pointed in the opposite direction. When the results are positive, then the case is entirely the other way, and this affirmation is of the highest value. It has often happened to ourselves that we have failed to transmit to a healthy creature—and even to a number—a disease notoriously contagious. What must it be, then, with one the contagiousness or mode of transmission of which is rather obscure? For years before Jenner introduced vaccination, observation had proved to non-scientific minds that inoculation with vaccine matter was a preservative from human Variola; had Jenner's early experiments produced only negative results—as they might have done—and he had accordingly declared observation to be at fault, he would have missed his immortality, and humanity might have lost for ever what is now a priceless boon. It might almost have been the same, had he maintained that, because inoculation with the vaccine virus did not produce all the symptoms and pathological alterations peculiar to Variola, it could not therefore be a preservative from the disease.

This has happened as the result of a very small number of negative experiments in the Contagious Pleuro-pneumonia of cattle, and has also been said as to preservative inoculation for that malady.

For years the horses of the French army were decimated by Glanders, which proved a terrible scourge. Because a few experiments at Alfort yielded negative results, the conclusion was jumped at that Chronic Glanders was not contagious, and therefore diseased horses were kept in the ranks among the healthy ones. For a long time also, and in consequence of the negative results of many experiments, the belief was widely prevalent, and acted upon, that horses and other animals could not become affected with Glanders through the digestive organs. Though clinical observation indicated otherwise, yet as experimental evidence was opposed to it, so for a long time incredulity was predominant. No fact is now better established than that horses, and even carnivorous animals, are readily and frequently infected through the stomach.

But we need not multiply instances which are so abundantly found in our medical annals; and our object now is to once more direct attention to, and to insist upon the necessity for remembering, the fact that when the results of experiments of this kind are negative, and the experience derived from observation is positive, with regard to contagious maladies, then the conclusions drawn from the experiments are to be received with the greatest caution. One positive experiment

is worth five hundred, or even a thousand, negative ones, so far as clinical observation is concerned.

The immense importance of bearing this fact in mind, is over and over again shown in the history of epizoötic diseases—though some peculiarly-constituted minds affect to ignore or depreciate this history, probably because they do not understand or are unacquainted with it. But a very significant illustration will be found in the report of the experiments now being carried on at the Brown Institute, with regard to Pleuro-pneumonia and Foot-and-mouth Disease, and which we publish in another page. It will there be found that all the attempts made to transmit the latter malady by inoculation and other means—save actual cohabitation—failed with a number of animals, and this failure was being quickly seized upon to prove that, if contagious at all, the malady was, at any rate, very much less so than had been imagined. And this notion was being promulgated by those who, even if their powers of observation had been of a very ordinary kind, or their memory at all retentive, must have known that few diseases are more readily transmissible, more infectious, or more rapidly extended over vast regions, than this, which the experiments went to prove was not capable of being conveyed to animals in the ordinary way. Had the experiments not been continued, we should probably have again had preached to us the old doctrine—the "atmospheric," or "something-in-the-air" nonsense, and the "Let-well-alone" dictum might have been modified to "Do nothing at all."

Of course, those who understood the nature of the disease, and were aware that it had been produced experimentally times without number, knew that one or more of the conditions necessary for successful transmission must have been absent—as no doubt did the experimenters at the Brown Institute. It will now be seen from the further report by Professor Duguid, which appears in the Proceedings of the Royal Agricultural Society, that "four of the experimental animals have become affected with it (Foot-and-mouth Disease), by feeding them with hay moistened with the saliva of diseased animals. *And had the virus of Foot-and-mouth Disease been more readily obtained, the others would in all probability have been infected before the present time.*"

The British farmer cannot be too thankful for the narrow escape he has just had. So much stress has lately been placed on the value of negative experiments by those high in authority, that he would have been made a greater victim than ever to the "atmospheric" and "something-in-the-air" fiction, and doubtless would have been compelled to submit, for another generation, to the "rest-and-be-thankful" principles which have well-nigh ruined him, and have caused England to be looked upon everywhere as the most dangerous country in the world to receive live stock from.

We cannot too strongly insist upon the urgent necessity there exists, for accepting the conclusions drawn from negative experiments with the utmost caution, or rather, suspicion, and especially when they are not in harmony with clinical observation. Our agriculturists have had

to yield themselves as subjects for many experiments in years past. They should be careful in accepting the results of unsuccessful ones in days to come.

Before members of the veterinary profession can receive as conclusive evidence of the non-contagiousness, either by mediate or immediate influence, of those diseases which their every-day experience has taught them to look upon as contagious, the experiments must be repeated again and again on a *large number of animals*, under every possible condition favourable for transmission, and with the most scrupulous care. One experiment yielding positive results will upset the deductions drawn from countless negative ones.

PLEURO-PNEUMONIA AND FOOT-AND-MOUTH DISEASE EXPERIMENTS.

DR. BURDON SANDERSON contributes to the *Journal of the Royal Agricultural Society* the following "Report on the Progress of the Investigations into Pleuro-pneumonia and Foot-and-mouth Disease, now being conducted at the Brown Institution."

PLEURO-PNEUMONIA.

As already reported in Vol. XII., Part ii., the experiments on Pleuro-pneumonia were not begun till the end of August, when the animals were in perfect health, and in as good condition as when they arrived at the Institution.

The first animals subjected to experiment were two yearlings. In one of these the exudation liquid, with which the lungs of diseased animals in the developed stage of the disease abound, was injected into the circulation. The liquid was used in an entirely undiluted state, and was derived from the lungs of animals just slaughtered. In performing the operation, the greatest care was taken to avoid the entering of the infecting liquid into the cellular tissue. The other animal was inoculated subcutaneously by injection into the cellular tissue. This case was also carefully watched. No effects were observed, except slight primary swelling at the seat of inoculation.

On the 3rd of November a good opportunity offered for the inoculation of a greater number of animals; liquid of the same kind was used, and was injected into the circulation of three animals—viz., two two-year-olds, and the yearling which previously had been inoculated in the cellular tissue and had continued throughout in perfect health. On the same day a cow was inoculated in the way ordinarily adopted for prophylactic purposes—viz., in the tail. In this case slight swelling and tenderness ensued about the fourth day. The swelling increased very slowly up to the tenth day, after which it began to subside. But after the fourteenth day signs of softening appeared at the seat of the puncture, and eventually a small slough was formed which corresponded exactly with the line of puncture by the needle. Since that period the process has gone on in the neighbouring tissue, so that at present the end of the tail, from a little above the seat of the inoculation, is undergoing slow necrosis. It is further to be noted that the swelling, up to the present time, has not extended to any distance from the seat of disease, and that the animal is still in perfect health and fair condition.

On November 10th, a calf nearly two months old was inoculated by injec-

tion into the venous system, in the same way as has been already described. There was in this case some local reaction, lasting for over a week—a circumstance probably attributable to the greater difficulty of performing the injection without interfering with the tissues in the neighbourhood of the vein. There has, however, been no general disturbance of the system.

Although I am not able to express an opinion as to the main question, it is worth while pointing out that the present experiments show, in the most convincing manner, that not only subcutaneous inoculation with diseased material can be performed without danger, if the necessary precautions are used, but that the more serious operation of injecting pulmonary exudation liquid into the circulating blood is not attended with any immediate results.

FOOT-AND-MOUTH DISEASE.

The experiments on Foot-and-mouth Disease were begun early in June. In the order of dates they are as follows :—

1. On June 12th, two cows were inoculated with saliva collected fresh from diseased animals at Deptford ; the mode of inoculation employed was by scarifying the gums.

2. On the 22nd of June the same animals were again operated on by submucous puncture, the material employed being diseased epithelium taken fresh from unruptured vesicles.

3. On the 29th the same two cows were fed with hay which had been steeped in the saliva of diseased animals. It was given within about three hours of its collection.

4. On July 11th the same method of inoculation as in Experiment 1 was again employed for the infection of two calves.

5. On Aug. 3rd the same calves had their gums again scarified, and saliva applied, and were then fed with a small quantity of hay soaked in the saliva of diseased animals.

6. On the 15th of August they were again fed with hay wet with the saliva of diseased animals.

7. In experiments 1, 2, 4, and 5 (each on one animal), infection was attempted by the method of subcutaneous injection of saliva, in addition to the other modes of operating, in the animals referred to.

8. On Oct. 28th the young calf, two months old, was injected subcutaneously with saliva.

9. The exudation material derived from the matrix of a diseased hoof was mixed with neutral and non-irritating saline solution, and injected subcutaneously in three animals, each receiving three separate punctures—viz., one in the ear, the second in the perinæum, and the third at the border of the hoof in the heel of the fore-foot.

The general result of these experiments has been, that in every instance, without exception, the effect of subcutaneous puncture has been to produce a limited abscess, containing a slough, with scarcely any extension of inflammation to neighbouring parts. In the case in which the punctures were made at the border of the hoof, no effect could be observed.

With reference to the general question of the communicability of the disease, the results must as yet be regarded as negative.

It is proposed to continue the investigation as follows :—

As regards Foot-and-mouth Disease, the experiments will be continued on the same plan, but new methods of infection on other animals will be tried.

As regards Pleuro-pneumonia we propose—

1. To repeat on those animals that have not yet been used for experiments on Pleuro-pneumonia the injection into the circulation.

2. To repeat on some the subcutaneous injection.

3. To subject animals previously tested by injection to the inhalation of fresh dried materials into the lungs.

4. To test the influence of cohabitation, by introducing some of the animals already experimented on by the other methods of infection referred to into stables occupied by diseased animals; and—

5. To have some of the others slaughtered, for the purpose of ascertaining whether or not, in the absence of any appreciable signs of infection, the lungs or other internal organs exhibit any latent changes, corresponding to undeveloped stages of the disease.

[The sequel to these experiments will be found in the report of the Royal Agricultural Society's Council meeting on p. 68, "Proceedings of Societies."]

THE UTILIZATION OF HORSES' URINE.

IN consequence of the way in which horses are stabled in Holland, the urine cannot be collected but when mixed with a considerable quantity of water. Hence the liquid manure of stables is of so little value to husbandmen that it will not defray the cost of carriage. Being of no avail to agriculture, this manure contributes to pollute both the soil and the running water.

The Utrecht Society for the Improvement of Public Health is of opinion that a process may be found so to detach the nitrogenic elements from the liquid manure of horse-stables, that it can be turned to account by manufacturers; and so to purify the remaining liquid that it may, without any detriment, be allowed to run into the rivers.

The above Society therefore offers a prize of a hundred guilders to whoever shall write the best treatise under the following heads:—

1. A brief statement of what has already been written on this subject.

2. An account of the investigations made by the author himself with the view of extracting from horse-urine, mixed with water, products which, either as manure or as chemical preparations, can be brought in considerable quantities into the market.

3. Detailed numerical tables of quantitative chemical analyses.

4. Financial aspect of the question: viz., an estimate of the expense of the establishments and apparatus required; an estimate of the probable costs of the process; and a statement of the minimum number of horses to which the process can be practically applied.

The essays may be written in Dutch, French, German, or English. They must contain no indication of the writer's name; but must be marked with a motto, and accompanied by a sealed letter enclosing the name (and address) of the author. The cover of this letter shall bear the same motto as that inscribed on the essay.

The essay must be forwarded to Prof. Dr. Th. MacGillavry, Director of the Veterinary School of Utrecht, before 1st September, 1878.

Unsuccessful essays will be returned to such addresses as may be indicated, while those to which a prize is awarded will be printed in the Reports of the Society, before insertion in which the author will not be allowed to publish his essay.

THE SO-CALLED ENTERIC OR TYPHOID FEVER OF THE PIG.*

BY DR. KLEIN, F.R.S.

I PROPOSE to give in this memoir a preliminary account of the results of an inquiry into the disease commonly called Pig-Typhoid. Dr. Budd, in a lecture to the members of the Royal Agricultural Society in 1865, and in his well-known treatise on Typhoid Fever, speaks of this disease in the pig as of the "exact counterpart of Typhoid Fever in man;" and Professor Wortley Axe, in his recent remarks on Typhoid Fever in pigs (the *Veterinarian*, July 1875, p. 489), concurs with this assertion of Dr. Budd, by trying to show that in etiological, clinical, and anatomical respects, both diseases are identical.

Being myself engaged in studying the anatomy of Typhoid or Enteric Fever in man, I was naturally anxious to see whether more light could be thrown on this disease by an experimental and anatomical inquiry into its "counterpart" in the pig. I was, therefore, greatly disappointed when, at the very outset of this inquiry, I found that in an anatomical sense the two diseases are essentially different from each other.

It is admitted by all pathologists that the anatomical lesions in human Typhoid are of so definite and specific a character, that by them, and by them alone, the disease can be recognised in most cases. As I shall show, the anatomical lesions in Pig-Typhoid are likewise of a very specific nature; being not only very characteristic of this and no other disease in the pig, but also essentially distinct from the human Typhoid. It is true the Pig-Typhoid bears some resemblance to real Typhoid in man, but this resemblance is not greater than that amongst infective diseases in general. As is well known, Pig-Typhoid is a highly infectious disease, associated with an eruption of the skin and ulceration of the large intestine. It has been assumed that the intestinal discharges are the carriers of the contagion, but this assumption seems not to have rested on any direct experimental proof; though from Professor Axe's experiments, it appears that lymph from the pustules of the skin of diseased animals has the power of producing the disease when inoculated into the skin of healthy animals.

I have succeeded in proving, experimentally, that the disease can be produced by inoculating into healthy animals matter obtained from the ulcerations of the intestine; and likewise that the blood of the diseased animals, at a stage when all symptoms are well developed, does not necessarily contain the contagium. In the latter respect the Pig-Typhoid is essentially different from Anthrax, with which it is usually confounded by Continental writers on account of a certain similarity of the anatomical appearances in the two

* From the "Report of the Medical Officer of the Privy Council" for 1876. In an early number of the *Veterinary Journal*, we insisted on the dissimilarity between this disease of the pig and human Typhoid. The differences between the two are to be found not only in their morbid anatomy, but also in their symptomatology and mode of infection and extension. If the disease of the pig must be compared with, or assimilated to, any malady affecting the human species, we would be inclined to place it with Scarlatina or Measles—certainly not with Typhoid, so far as our researches extend: and we have been rather fortunate recently in being provided with opportunities for studying the scourge. At a recent meeting of the Pathological Society of London—at which Dr. Klein read a paper on the malady—Dr. Murchison, the president, said that ten years ago he brought the subject before that Society. The disease had nothing to do with human Typhoid: there was no Typhoid rash on the skin; indeed, the rash was more like that of Scarlatina. It was popularly termed the "red soldier."

diseases; for in Anthrax the blood, as is well known, is pre-eminently loaded with the contagium.

A.—The experiments to be recorded in the following have been carried out in conjunction with Mr. W. Duguid, veterinary surgeon at the Brown Institution. They were all performed on young animals.

Experiment 1.—Two perfectly healthy pigs were fed on a piece of large intestine full of ulcers; the material was used perfectly fresh, just as it was removed from the animal that had been killed for the purpose of the research. The animals remained perfectly healthy.

Experiment 2.—Small pieces of the spleen of a Typhoid pig, full of whitish nodules of different sizes (see the following section), were rubbed up with three-quarters per cent. saline solution; of this material one healthy pig received a considerable quantity as food; a few divisions of a Pravaz syringe of the same material were injected into the skin of the groin of another healthy pig. The first animal died on the eighth, the other on the twelfth day; in both cases the "Typhoid" symptoms were very well marked.

Experiment 3.—A healthy pig received into the skin of its right groin half a syringeful of the blood and juice of a swollen lymphatic gland, taken from an animal recently dead of the disease, and in which all the anatomical appearances were very well marked. The infected animal showed no signs of the disease for sixteen days, except a small hard nodule (the skin not adherent) in the subcutaneous tissue at the seat of the injection; so that we are quite justified in assuming that the result of the experiment was negative. And this is of very great importance, inasmuch as it tends to furnish direct additional proof of the difference between Anthrax and the disease in question, the former being pre-eminently infectious through the blood.

Experiment 4.—From the same pig as in the preceding experiment fresh material was obtained (by scraping) from an ulcer of the large intestine, and this material, having been suspended in three-quarters per cent. saline solution, was injected into the skin of the groin of a healthy animal. After ten days the animal died, with exceedingly well-marked appearances of Pig-Typhoid in skin, intestine, lung, and lymphatic glands. The inguinal lymphatic glands near the seat of inoculation were especially enlarged, and deep-red. The soft palate was swollen, and contained follicular ulcerations.

Experiment 5.—Ulcerated parts of intestine of the same animal as that used in experiments 3 and 4 were kept macerating in water for three days, and then swallowed by a healthy animal. This animal died after thirteen days, under very marked symptoms of Pig-Typhoid: the appearances of skin, intestine, lung, lymphatic glands, etc., being exceedingly well developed —much more than in experiment 4.

The experiment does not, however, prove, as it seems to do, contrary to the experience of experiment 1, that the disease may be communicated by the food; for the very important fact of the infective material having had to be introduced by force must not by any means be lost sight of, as rendering more than possible that in the struggle superficial injuries to the mucous membrane of the mouth may have been the means of effecting inoculation, and that, therefore, this experiment 5 may belong to the same category as experiment 4—*i.e.*, inoculation through direct injection into the connective tissue of the integument. Whether this is so or not we intend to determine by new experiments.

Experiment 6.—The last experiment for the present, but not the least important one, is this: The same animal that had been inoculated with blood and juice of lymphatic glands, and, as we have seen, remained healthy, was again inoculated into the left groin on October 19th,—this time not with

blood, but with material obtained (by scraping) from an intestinal ulcer of the animal that had died in consequence of experiment 5.

The animal showed very little marked alterations while alive, but, being killed after twelve days, was found to present the following changes: At the seat of the second inoculation there was an abscess in the subcutaneous tissue, this being at the same time closely adherent to the skin. The inguinal glands of the same side much enlarged and very red; so also the lumbar, sternal, and bronchial lymphatic glands. The two last-named had the very characteristic aspect of the lymphatic glands in Pig-Typhoid: see the following section. The mucous membrane of the intestine pale, except at the ileo-cæcal valve, which contained a few very small defects of the mucosa; and microscopic examination proved unmistakably that the mucosa at the ileo-cæcal valve was diseased, though only in a mild degree: see the last section.

The appearance of the lymphatic glands, and the microscopic examination of the intestine (ileo-cæcal valve) in this case, leave no doubt about the animal having been suffering under a very slight degree of Pig-Typhoid. This experiment contrasts in an important manner with experiment 3—for both were performed on the same animal; but in experiment 3, where blood and juice of the lymphatic glands had been used as inoculation-material, no disease was produced, whereas in experiment 6, where material of an ulcer had been inoculated, the animal became smitten with Pig-Typhoid. It might be argued that the condition of the lymphatic glands and intestine as found after the animal was killed may be, perhaps, referred to the first inoculation; this objection can easily be disposed of, for the microscopic examination proved the changes of the lymphatic glands and intestine to be of recent date; and besides, the characteristic typhoid charges of the inguinal glands near the seat of the second inoculation are quite conclusive.

It is, however, clear to us that in order to arrive at definite conclusions we have to repeat the experiments. As far as they go at present we are inclined to assume,—

(1.) That the skin of the diseased animals contains the contagium, as appears from the experiments of Professor Axe.

(2.) That the ulcers of the large intestine, and likewise the diseased spleen, contain the contagium, as appears from my experiments 2, 4, 5, and 6.

(3.) That the contagium is probably not contained in the blood and lymphatic glands at a late stage of the disease; but before this negative conclusion is accepted, additional experiments are particularly requisite.

(4.) That the disease can be produced by inoculation from intestinal ulcers into the skin, as appears from my experiments 4 and 6.

(5.) That whether the same can be achieved by simple feeding with matter of the intestinal ulcers is doubtful: see experiments 1 and 5.

Whether the contagium is also contained in the lung, and whether the disease can be produced by inoculating directly into the blood, are questions which cannot be answered without additional experiments.

B. The following are the appearances presented by our animals at the *post-mortem* examination:—

(*a.*) *Skin.*—In most of the twelve animals that were examined the skin was affected. The skin about the perinæum, symphysis, and groins was swollen and of diffuse red colour; so was also the skin of the neck. The ear-lobes much swollen, especially near the tips, and red. The same of the skin of the nose. In two cases there was no distinct rash, and in one case there were in the skin of groins, and especially in both ear-lobes, (a few in former, numerous in latter place,) smaller or larger necrotic patches of the superficial part of the skin, including epidermis and corium.

(b.) Intestine.—Small intestine shows, as a rule, Hyperæmia, and in some cases Ecchymosis in the mucous and submucous tissue, and the serous covering. In some rare cases the same is seen also in the stomach. Large intestine shows always the most characteristic appearances. There are at least smaller or larger, isolated or confluent, generally roundish, ulcerations at and around the ileo-cæcal valve, the rest of the mucous membrane being hyperæmic, even to Ecchymosis. In the highest degree the whole large intestine down to the rectum contains ulcers; in the cæcum they are confluent, and measure several inches, extending transversely as well as longitudinally; while the whole remaining mucous membrane of the large intestine is much thickened, and in some parts the submucous tissue contains large accumulations of blood. The ulcers are of various aspects. The following forms may be seen: very minute, well-defined, prominent, yellowish-white specks of the size of a millet or hemp-seed; then somewhat larger, more flattened, prominent, circular or oval yellowish patches (with which in one case the whole mucous membrane of the cæcum seemed quite covered), of the size of a hemp-seed, up to about $\frac{1}{8}$th of an inch in diameter; next, flat, circular, or slightly oblong patches, situated on the crest of a fold of the mucous membrane, in size from $\frac{1}{8}$th to 1 inch in diameter, generally black or grey (from bile pigment), except a very conspicuous and, I may almost say, characteristic prominent rim, which is yellow. The ulcer generally shows a pale, central, or eccentric disc, around which the rest of the ulcer is arranged as concentric rings. Between these flat ulcers with concentric layers, and those uniform yellowish-white prominent patches and nodules, there are all intermediary forms; this is easily understood if it is borne in mind that as the latter increase in size, the central part is transformed into that black or greyish mass. Besides these there are very often found on the surface of the mucosa minute whitish specks, just perceptible by the unaided eye. In one single instance have I seen ulcerations of the lower part of the ileum. This case had exceedingly numerous ulcerations of the large intestine. The two ulcers of the ileum were quite different from the ulcers generally found in the large intestine, for they were oblong, deep pits, surrounded by a thick, prominent wall of swollen mucous membrane, very much the same as ulcers of human Typhoid; on the peritoneal surfaces there was an elevation corresponding to them.

The above-described ulceration of the large intestine of the pig cannot in any way be confounded with the characteristic ulcers of human Typhoid; the differences are really striking on the most superficial inspection. The only similarity may be said to exist between those early cases of human Typhoid which French writers call *la forme bouttoneuse* (where the mucosa of the lower part of ileum and cæcum is studded with small papular structures, due to enlargement of solitary lymph-follicles and local accumulations of lymphatic tissue), and the forms of Pig-Typhoid where the mucosa of the cæcum is covered with slightly elevated papulæ or patches. But under any circumstance the microscope reveals a marvellous difference in the two diseases, for in the Pig-Typhoid these patches, whether nodules or ulcers, *have absolutely nothing whatever to do with lymphatic follicles;* whereas in human Typhoid we find, in the first stage, round or generally oblong, prominent, papulæ or patches of swollen lymph-follicles, surrounded by swollen mucous membrane; after which stage the greater part of the swollen lymphatic patches dies and is finally discharged as a slough, leaving behind a pit-like excavation bordered by elevated overhanging mucosa.

(*To be continued.*)

Reviews.

THE BOOK OF THE HORSE. By S. Sidney. London: Cassell, Petter, and Galpin.

Mr. Sidney's "Book of the Horse" is a grand one, in size, style, and matter, and we fancy that few horsemen or horsewomen who can afford to purchase it will be without it. We do not know that there is any book on the horse or on horsemanship at all equal to this. The coloured plates are superb, the wood engravings are excellent, numerous, and illustrative in the true sense of the term; while the finish of the book, with its profusion of gilding and massiveness, makes it well deserving of a conspicuous place on the drawing-room table.

The credit for most, if not all of this, must, of course, be awarded to the enterprising publishers; and we trust that a large sale may recompense them for their great liberality in promoting the welfare and utility of the most useful, beautiful, and noble domestic animal we possess. And Mr. Sidney well merits all possible praise for furnishing those who keep horses because they must, as well as those who keep them because they love them, and have them chiefly for pleasure, with a book which is crowded with solid information, imparted in an easy, pleasant style, on everything connected with the management and utilization of all sorts and sizes of the equine genus. The large experience of a fairly long lifetime among horses, the natural tastes of a horseman, and an educated mind and eye for all that concerns the fascinating animal, as well as constant contact with kindred spirits and an intimate acquaintance with much of what has been written and said on matters pertaining to the horse,—all have rendered Mr. Sidney eminently qualified for his task, and make his opinions and advice peculiarly valuable.

Not only are horses discoursed about, and their breeds, points, health, management, etc., duly and practically considered, but the best, most humane, and "elegant" way of using them, are described as none but an accomplished horseman could succeed in doing. A very interesting and valuable chapter treats of carriages; another of harness and saddles, bits and bridles; another, well worth careful reading, on the "purchase of horses"; another on hunting: in fact, the work contains the most ample information on everything necessary to be known by those who have to do with horses.

The author shows his wisdom in the chapter headed "Veterinary Information," in avoiding bewildering descriptions of diseases, their symptoms, and treatment, and in not attempting to teach every man to be his own quack. We are convinced, from nearly every-day experience, that amateur doctoring is not profitable, and that horse-owners would best consult their own interests, and also that of their property, if they adopted Mr. Sidney's advice: "When a horse is really ill, or meets with a serious accident, the only wise course is to send for a veterinary surgeon, whose profession it is to discover the cause of illness, to know the structure of the bones and muscles, and to apply the appropriate remedies or perform the necessary operations." The information given

in this chapter is only with a view to emergencies, when the veterinary surgeon may not be within immediate reach.

We congratulate Mr. Sidney and his publishers in producing a book in every way worthy of a nation of, we were about to say "horse-worshippers," but we will, for fear of being accused of profanity, say "equestrians" in the real meaning of the word. Its study will benefit experienced horsemen, while for the novice or amateur it will be found to combine business with pleasure. It is eminently useful and ornamental.

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD MAY 29TH, 1877.

Present—Colonel Sir F. Fitzwygram; Messrs, Balls, Batt, Broad, Blakeway, Collins, Cuthbert, Cartledge, Dray, Fleming, Gowing, Greaves, Harpley, Hunt, Reynolds, Taylor, and the Secretary.

On the motion of Mr. DRAY, seconded by Mr. BALLS, Col. Sir F. Fitzwygram was voted to the chair.

The SECRETARY read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Letters were read from Professor Williams, Edinburgh, and Mr. Cox, regretting their inability to attend the meeting.

Election of President.

Mr. DRAY said that once more he had the honour and very great pleasure of proposing the election of Col. Sir Frederick Fitzwygram as President of the Council. No words could sufficiently express the great obligations they were under to Sir Frederick, for his unceasing care and unabated energy in promoting the interests and advancement of the veterinary art. Gentlemen equal to Sir Frederick were seldom met with. Position, influence, generosity, and great ability had all been combined to raise the status of the profession. The unceasing attention and the valuable time Sir Frederick had given to the performance of his duties were unprecedented. As a proof of his assiduity—if any were required—he would refer to Sir Frederick's visit to Leeds at the annual meeting of the Yorkshire Veterinary Medical Society, and his journey to Scotland to attend the examination of the students. He therefore indulged in the hope that the Council would retain Sir Frederick's estimable services as President.

Sir F. FITZWYGRAM said he should like to state that it had not been his wish, even if the Council were pleased to elect him, to accept the office of President, and that for several reasons. He felt that in some respects it was undesirable that the same person should remain in office for three years. The office of President was an object of honourable ambition on the part of a great many members of the profession, and therefore he considered it was undesirable and almost selfish that one person should hold it for so long a period. Mr. Dray, however, had spoken of him in the most kindly terms;

and if it should be the general wish of the Council that for another year he ought to retain the office of President, he should have great pleasure in doing so. He had been engaged for the last four or five years in matters of very considerable importance, which were as yet scarcely finished, and he felt that his duty towards the measures he had undertaken was not quite completed until he saw those measures fairly established. Of course, he could not pretend to anticipate what the result of the election might be, but he had made up his mind that, should it be a general wish that he should accept the office of President, he should have great pleasure in doing so.

On the ballot being taken, it was found that the President was unanimously re-elected.

The PRESIDENT thanked the Council for the honour that had been bestowed upon him, and said it would be his pride and his pleasure to do the best he could in the high office to which he had been re-elected.

Election of Vice-Presidents.

The Council then proceeded to the election of six Vice-Presidents.

Mr. Moore and Prof. Duguid were nominated by Mr. Harpley.

Mr. William Smith, of Norwich, was proposed by Mr. Cartledge.

Mr. Withers,	,,	Mr. Broad.
Mr. J. Woodger, jun..	,,	Mr. Gowing.
Mr. Jas. Freeman, of Hull,	,,	Mr. Dray.
Mr. T. P. Gudgin,	,,	Mr. Collins.
Prof. Walley,	,,	Mr. Fleming.
Mr. Cartwright,	,,	Mr. Taylor.
Mr. George Morgan,	,,	Mr. Reynolds.
Mr. Martin Naylor,	,,	Mr. Hunt.
Professor McCall,	,,	The President.

The balloting was then proceeded with, and the following was the result:—

	Votes.		Votes.
Mr. Withers . .	16	Mr. Jas. Freeman .	7
Mr. Woodger, jun. .	10	Mr. Morgan . . .	5
Mr. Cartwright . .	9	Mr. Naylor . . .	5
Prof. McCall . .	9	Mr. Moore . . .	4
Prof. Walley . .	8	Prof. Duguid . .	4
Mr. W. Smith . .	7	Mr. Gudgin . . .	4

Mr. Smith and Mr. Freeman, having received an equal number of votes, were again balloted for, when Mr. Smith obtained 11 and Mr. Freeman 6.

The PRESIDENT then declared Messrs. Withers, Woodger, Cartwright, McCall, Walley, and Smith duly elected.

On the motion of Mr. DRAY, Mr. Withers was unanimously re-elected Treasurer.

The PRESIDENT moved, and Mr. CARTLEDGE seconded, a vote of thanks to Mr. Withers for his services, which was carried unanimously.

On the motion of Mr. BROAD, Mr. Coates was unanimously re-elected Secretary; and on the motion of Mr. DRAY, he was re-elected Registrar..

This concluded the business of the first special meeting.

SECOND SPECIAL MEETING.

The following letters were received :—

Letters from Mr. Harpley, Mr. Blakeway, Mr. Cartledge, and Mr. P. Taylor, acknowledging their election as members of the Council.

A letter from Dr. Dunsmure in answer to a communication sent him some time ago with regard to a less number than nine students coming up for examination.

Dr. Dunsmure, in reply, stated that the Board was summoned, not for Glasgow, but to examine twenty-four students from the three Scotch colleges. He interpreted the late resolution of Council to mean that there was to be no examination unless there were nine students from all the schools collectively, and not from one only, and that odd students were to go from Glasgow to Edinburgh, and *vice versâ*, to make the requisite number. He desired to know whether the resolution of Council was to be strictly adhered to, and whether an examination for seven or eight was to be refused.

Letters were received from Sir Samuel Scott & Co., bankers, stating that they had now registered the death of the late Mr. William Field, jun., at the Bank of England, and that the necessary arrangements would now be made by their brokers, Messrs. Johnson and Longden, for the transfer of the stock of £1390 17*s.* 1*d.* belonging to the College Fund, and £640 19*s.* 11*d.* Consols, of the Royal College of Veterinary Surgeons. In accordance with instructions received, the surviving trustees, Messrs. Cartwright, Lowe, and Balls, attended at the Bank of England on May 24th, when the transfer was effected in both sums, with the additional name of Mr. James Collins as the newly appointed trustee.

Also another letter from Sir S. Scott & Co., May 25th, in which they stated that they had completed the transfer of Consols from the survivors to the joint account with the new trustee. They enclosed brokers' notes and stock receipts, and stated that the commission is debited to the account of the Royal College of Veterinary Surgeons.

A letter from Mr. James Moore, Upper Berkeley Street, was read, offering to give ten guineas, if 200 members would subscribe five guineas each, towards a fund to be raised before February, 1878, for obtaining an Act of Parliament to prevent unqualified persons assuming the title of veterinary surgeons, and styling themselves M.R.C.V.S.

The Secretary was instructed to acknowledge the receipt of the letter, and to say that the matter would be considered.

The SECRETARY stated that a letter was received addressed to the President from Mr. Furnival, Kingston-on-Thames, asking his authority to insert an advertisement in two local papers, to the effect that J. C. Aspin, styling himself in the local directory M.R.C.V.S., was not a member of the College. A disclaimer was sent by the Secretary for his insertion. Mr. Furnival then replied, enclosing address of the publisher of the "Kingston Local Directory," suggesting that a sharp reprimand be sent for inserting Aspin's name with the initials M.R.C.V.S., and that he wished to have a copy of the disclaimer by Thursday next. A second copy of the disclaimer was then sent. The publisher of the *Surrey Comet*, Kingston-on-Thames, wrote to the Secretary on that day (Tuesday), stating he had received from Mr. Furnival a disclaimer for insertion; but as it was a serious charge, he wished to know if he had the Registrar's authority for its insertion.

The PRESIDENT instructed the Secretary to reply in the following terms: —"Sir,—the letter to which you allude was written by me in my official capacity as Registrar of the Royal College of Veterinary Surgeons, in reply to an inquiry whether Mr. Aspin is a member of the Royal College of Veterinary Surgeons. It is simply the statement of a fact."

A letter from Dr. Taylor, stating that if his attendance was required at the July examinations, under the old regulations, on receiving notice he would attend; but with respect to the new regulations, he wished to have his name withdrawn for re-election.

A letter from Mr. Birkett in reply to the resolution of Council, and begging to decline the post of examiner on histology, although he would be happy to continue the examination as heretofore.

A letter from Dr. Burdon-Sanderson, offering himself as a candidate for examiner on physiology.

Letter from Professor Turner, acknowledging the resolution passed by the Council in October, 1876.

A letter from Mr. Harpley, tendering his resignation as a member of the Court of Examiners previous to the appointment of the new Board, and stating he was ready to serve again on the Examining Board.

Also a letter from Mr. Fleming, tendering his resignation as a member of the Court of Examiners, but willing to accept office if re-elected.

A letter from Mr. G. A. Oliphant, Hapur, N.W. Provinces, India, enclosing ten guineas, being the fee for his election as Primary Fellow, and one from his brother, acknowledging the receipt of diploma sent to him at Charlton, in Kent.

Also letters from Professors James Law, of Cornell University, U.S., and M'Eachran, Montreal, acknowledging receipt of their diplomas.

A letter was received from Mr. Richard Poyser, 6th Dragoon Guards, York, wishing his name to be entered for the degree of Fellowship at the first examination; also from Mr. Robert Ward, of Winchester, who is a candidate for the degree of Fellowship, wishing to know the amount of fee. Mr. William Hunting was also a candidate for the degree of Fellowship by examination, and he wrote saying that, having been a teacher at a recognised school, he was, he believed, rendered exempt from undergoing the ordeal of an examination at the College of Preceptors.

A letter was read from Captain Russell, of Grantham, requesting to know whether, if he should offer himself as a candidate for the Fellowship degree, he would be required to fulfil the conditions of "Bye-law 50." He pointed out that he had passed the requisite examination for his commission in Her Majesty's Army, besides other examinations.

The PRESIDENT thought that passing the ordinary army examination would be quite sufficient, and that Captain Russell had the ordinary general amount of education.

Mr. P. TAYLOR thought it was certainly going back to school times to call upon a man who had been a certain length of time a veterinary surgeon to go through the ordeal of a Preceptors' examination. He was of opinion this would militate against members of the profession coming forward to obtain the honorary degree of Fellow.

The PRESIDENT said that the only object of the Council in having the preliminary educational examination, was to ascertain that the person possessed the ordinary education of an English gentleman, and would not be a discredit to the profession. If Captain Russell had passed the ordinary examination for officers, he thought the Council would do unwisely to ask him to undergo another examination by the College of Preceptors. He proposed that an answer be sent to Captain Russell, stating that he could come up for a professional examination.

Mr. REYNOLDS pointed out that this would be over-riding Bye-law 50, which gave one alternative only. The applicant must be a graduate in arts, or produce a certificate of liberal education after an examination by the College of Preceptors.

The PRESIDENT said in that case it would be necessary to give the usual three months' notice to alter Bye-law 50, and instructed the Secretary to write to Captain Russell, informing him that he must wait until the expiration of that period.

The PRESIDENT brought forward the motion of which he had given notice, to strike out the words "writing of prescriptions" from the first clause of the "Regulations for the Examinations of Students." His reasons for so moving

were three. In the first place, it had been misunderstood in several quarters. Writing of prescriptions had been understood to imply that the students had some knowledge of medicine. The only object, however, was simply to secure a certain amount of education to the students in the first year of examination, because it was found, when a student came to write certificates for his last examination, sometimes the education was so deficient and the spelling so bad that the examiners were rather inclined to reject the student, which was a very hard case; and, therefore, this slight trial of his education was made on his first examination. It had, however, been objected to, and perhaps it was not worth pressing. His other reason for it was that it was proposed at the first examination that the examiners should sit singly, and if they had to sit singly he did not see how one of the examiners could take charge of the writing of prescriptions if he had to be single-handed in other subjects. He thought, thirdly, that as the Council proposed to ask the examiner sitting singly to examine twelve students per night instead of nine, it would be unwise to ask him also to supervise the writing of prescriptions. It was for these reasons that he wished the words to be struck out.

Mr. HARPLEY seconded the motion.

Mr. P. TAYLOR thought that the words ought not to be struck out, and that the writing of prescriptions ought to be carried out in the practical examinations. He thought it added to the dignity of a surgeon to be able, in a scientific manner, to write out a prescription.

The PRESIDENT said they could be added to Clause 8.

Mr. TAYLOR then moved that the words "and prescriptions" should be inserted in Clause 8, after the words "in the writing of certificates."

Mr. REYNOLDS seconded the motion.

The two motions were then put separately, and carried.

The SECRETARY read the following report of the Committee appointed to inquire into the equalisation of income and expenditure:—

"The Committee having assembled according to notice, proceeded in the first place to investigate the ordinary income and expenditure. In the past year many unusual expenses occurred, and the income was also increased by unusual receipts.

"Deducting, however, these extraordinary expenses and receipts, the ordinary income of the year appears to have been,—

From Examination fees	£1,134	0	0
Dividends	19	0	0
		£1,153	0	0

"The ordinary expenditure appears to have been,—

Examiners' fees	796	0	0
Rent, rates, and taxes	137	0	0
Salary to Secretary	150	0	0
Advertising and printing	55	0	0
Stationery and postages	28	0	0
Reporters	22	0	0
Coals, gas, and wood	20	0	0
House expenses and messenger	40	0	0
	£1,248	0	0

"Exclusive of the expense of examination, the usual annual expenditure of the College appears to be about £452. The average annual income, after defraying the expenses of the examination, appears to be about £357, showing an annual excess of expenditure over income of £95.

"The Committee believe that there are no means by which the income could be judiciously increased.

"The only income of the College is that derived from fees for examination of students; and the Committee think that it would not be advisable to increase the fees, especially after the tax lately laid on the rejected students.

"The Committee think the practice of advertising the examinations in the public newspapers unnecessary, and recommend that it be discontinued. This will effect a saving of about £12 per year.

"The Committee think a reduction might be made of £20 per annum [illegible] wages.

"The Committee consider it absolutely necessary that the expense of the examinations be reduced.

"This might be effected—1st, by reducing the number of examinations in the year; 2nd, by examining a greater number of students at each sitting.

"The Committee recommend that no more than two examinations be held in the year.

"The Committee recommend that the number examined at each sitting be increased from nine to twelve.

"The Committee also recommend that in case of broken numbers of students (*i.e.* less than twelve), the examiners should be requested to examine any number not exceeding four, on receiving a proportionate increase on the fee for the evening.

"The Committee suggest that the time given for the examination of each student should be reduced from twenty minutes to fifteen minutes.

"The Committee append a statement of the cost and receipts of examination on the supposition of examining nine students per night, and a statement of the examination of twelve students.

Receipt of Fees.	£	*s.*	*d.*
Nine students' fees at £3 3*s.*	28	7	0
Three examinations			3
	85	1	0
Nine registration fees at £1 1*s.*	9	9	0
	94	10	0
Expenses	55	3	0
	39	7	0

Disbursements.	£	*s.*	*d.*
For the First and Second Examinations, six examination fees at £3 3*s.*	18	18	0
For the Third or Pass Examination, five examination fees at £3 3*s.*	15	15	0
Four Practical Examination fees at £2 2*s.*	8	8	0
Incidental expenses, horses, etc.	2	2	0
Examiners' travelling expenses, etc.	10	0	0
	55	3	0

The result of eighty-one students examined, £354 3*s.*

	£	*s.*	*d.*
Twelve students' fees at £3 3*s.*	37	16	0
Three examinations			3
	113	8	0
Twelve registration fees at £1 1*s.*	12	12	0
	126	0	0
Expenses	55	3	0
	70	17	0

	£	*s.*	*d.*
Disbursement — examination fees, incidental and travelling expenses, as above	55	3	0
	55	3	0

The result of eighty-one students examined, £478 4*s.* 9*d.*

"The result shows that with nine students examined per night the net income of the College, after paying the expenses of the examination, would be about £350, which is much less than the present rate of expenditure.

"On the supposition of examining twelve students per night, the net income would be about £478 if the quota of twelve were complete each night. But if the numbers were less on any night, the profit would be less. Allowing for this, it would not be safe to take the estimate average income at more than £450. This would be sufficient for the reduced scale of expenses (which are about £420 per annum); it, however, does not include extra or unusual expenses, which are only too apt to occur.

"On the other hand, some income will be obtained from the fees on admission of Fellows.

"The above estimate of the expense of the examinations is grounded on the supposition that the Council adhere to the scheme of examiners sitting single at the first and second examinations.

"Finally, the Committee recommend (if the income under the plan suggested should prove to be insufficient) that the fee paid by the students on the third examination, where two examiners are employed at each table, should be increased from three guineas to four guineas.

"F. W. FITZWYGRAM,
"Chairman."

On the motion of Mr. DRAY, seconded by Mr. FLEMING, it was resolved that the report be received.

Mr. TAYLOR proposed that the report be printed, in order to give the Council time to consider it. He had a great objection to one examiner being at one table, and thought there ought in justice to the pupil to be two.

Mr. HARPLEY explained to Mr. Taylor that the only reason why one examiner was proposed was because there were no funds to pay two. It was quite within the knowledge of the Council that, for the last two or three years, the income had not been sufficient to meet the expenses. There were many things in the scheme which the Committee would not have brought before the Council if they could have seen any other way out of the financial difficulty. The only objection to printing the report would be the expense.

The PRESIDENT pointed out that the cause of the excess of expenditure over income had arisen mainly, not from any extravagance on the part of the Council, but from the fact that the same fee was charged as was charged five years ago, while the students were being examined twice for it; and now it was proposed to examine them three times for the same sum, and these three examinations would cost a good deal more than the one single examination. If there were to be three examinations some contrivance must be resorted to to cheapen them, either by having a single examiner, or by getting the examiners to examine a larger number in the evening, or by having a single examiner and a larger number examined. Even if this were done, the margin between the income and the expenditure would not be very large. The usual annual expenditure of the College, exclusive of examinations, was £452, and if this scheme were adopted there would not be a larger amount than £478; so that, even if there were a single examiner and an extra number examined, there would not be any surplus income. He quite agreed that it was more desirable to have two examiners sitting together than to have one; but that was not the question. They must either stand to their single examiner, or they must retrograde and have one examination instead of three, or some other plan. At the final examination, which was the principal one, there would be two examiners sitting at each table, and by the adoption of the new term "Indifferent," a single examiner would have the power to put "I" against the student instead of "B," and the "I" simply

put by one examiner would not reject the student. The terms had hitherto been "Good," "Sufficient," and "Bad," but perhaps now the middle term, "Indifferent," would be sufficient for a single examiner to use.

Mr. FLEMING said, as the examinations had been divided into three portions, if there were two examiners at each table the Council could never afford to pay them. It was entirely a question of finance, and he had not the faintest doubt also that the examiners would find that there was a large amount of responsibility resting on their shoulders, and that the duty of examining such a large number of students without any pause would be a very hard one.

In answer to Mr. Greaves, the PRESIDENT said that at present the Board would not be called unless there were nine students, and under the new regulation the Board would not be called unless there were twelve students. Supposing there happened to be fourteen students, it cost a considerable amount of money to examine the two extra students over and above the original twelve for which the Board was called. It had hitherto been the custom to pay the examiners for the extra number of two as a full number of nine or twelve, as the case might be; and for that reason a clause had been put in, so that only the proportionate amount of fees for the extra number for the evening would be paid. He moved that the report be printed and a copy sent to each member of Council.

Mr. P. TAYLOR seconded the motion, which was carried.

The SECRETARY stated that Professor Brown had presented to the Library the "Annual Report of the Veterinary Department of the Privy Council."

On the motion of Mr. DRAY, seconded by Mr. GOWING, the thanks of the Council were awarded to Professor Brown for his presentation.

The SECRETARY asked for the sanction of the Council to destroy the minutes of the Board of Examiners taken at the examinations from 1844 to within five years of the present date, as they occupied a considerable quantity of room.

The PRESIDENT said he had looked over the papers, and thought they were quite useless, and if the examiners were to sit singly they could not be used. He would, therefore, move at the next meeting that they be discontinued.

Mr. HUNT was of the same opinion as to the inutility of the papers. He had a mode of keeping memoranda which sufficiently served his purpose in finding out what the result of the examinations was.

Mr. FLEMING gave notice that at the next meeting he would draw attention to the general education of the students, and make a motion thereon. His object was to get some uniformity in the education of students.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of this Society was held on Wednesday afternoon, in the London Hotel, Edinburgh—Mr. C. Cunninghame, Slateford, President, in the chair. There were also present Professors Vaughan, M'Fadyean, and Johnson, Messrs. Baird, Reid, Walker (7th Hussars), Balfour, J. Aitken, sen., Young, East Calder; J. Aitken, jun., Borthwick; Balfour, sen., and Cumming, Secretary.

The minutes of last meeting having been read and approved, Messrs. Moir, Edinburgh, and Mitchell, Bathgate, who had been proposed at last meeting, were duly elected members. A discussion on the rules of a proposed Scottish branch of the National Veterinary Benevolent and Mutual Defence Society, was postponed in consideration of the small attendance—Principals Walley,

Williams, and others being unavoidably absent. On the suggestion of Mr. Reid, it was agreed that the rules referred to should be printed and circulated among the members.

Interesting Cases.

Mr. BAIRD mentioned the case of a Collie dog in the last stage of Distemper, which had come under his notice. The animal was so bad that its owner had determined on having it destroyed. After being treated with doses of strong coffee and a little sweet milk, the animal was in a short time able to stand and walk. He had heard of this kind of treatment for certain ailments in horses, more particularly in France; and he mentioned this case that they might adopt a similar line of treatment.

Professor M'FADYEAN, in the absence of Principal Walley, gave a short history of two cases of interest. The first was that of a horse, sections of whose third and fourth cervical vertebræ were ossified together. The animal was born with its knees imbedded in the hollow of the neck. It was found to have a deformity about the centre of the neck, which had a peculiarly arched appearance. The animal thrived, however, and at four years old was sold at £48. The purchaser feeling uneasy as to the horse's irregularity of action, and thinking it had suffered from disorder, sold it at a loss. It was subsequently sold and resold, and finally disposed of for the small sum of £8. It remained in the possession of its last owner for a period of ten years, during which time it did its work remarkably well, and, in fact, was said to be one of the strongest horses in Leith,—though it always exhibited a slight irregularity of action, the cause of which remained a mystery till the animal's death, when the ossification of the two vertebræ was discovered. It was hardly possible to understand how the functions of the spinal cord could have been properly performed under the peculiar circumstances. The second case was that of a horse which died after having eaten a portion of oil-cake, which was of the same manufacture as that which occasioned the death of a number of cattle at Haddington. During Saturday, the 13th January, the horse was engaged in carting cake, and the carter gave the animal half a cake. The horse died on the night of the following day in convulsions. The following are Principal Walley's notes on the case:—"On the night of the 13th January I was asked to see a black horse, which the owner said was dull, restless, and off his appetite. As the symptoms did not appear urgent, and I was very tired at the time, I sent a ball composed of carbonate of ammonia and opium, and gave directions that a message be sent immediately if the symptoms became of a more urgent nature. I saw the horse about 11 a.m. the next day, and observed the following symptoms: Pulse quick and weak; breathing slightly stertorious; mucous membranes of a pale and dirty hue; total loss of appetite, and mouth very fœtid. I ordered carbonate of ammonia and whisky, the application of an irritant to the chest, and a repetition of the dose at 2.30 p.m. At 5.30 I found him nearly pulseless, breathing heavily, and very restless, but with no absolute abdominal pain. I gave a guarded opinion that the horse had eaten some deleterious matter, ordered more carbonate of ammonia and whisky, and applied mustard to the chest, the legs to be rubbed and bandaged, and the body well clothed. At 9 o'clock he was pulseless, nostrils dilated, body in cold sweats; and while I was watching his movements, he suddenly pitched forwards with the nose doubled under the sternum, and lay in an unconscious condition, straining violently, eructating fœtid gas, and passing flatus; he died about 9.30 p.m. in convulsions. On *post-mortem* examination, at 10.30 a.m. next day, I observed the following facts:—The muscles pale, flaccid, and friable; extensive inter-muscular ecchymoses; a dirty-coloured effusion

in abdominal cavity; right side of the heart full of black fluid blood; and the endocardium purple; small recent *ante-mortem* clot in the left ventricle, the endocardium of which was ecchymosed; one lung and also a part of the liver congested; colon full of dirty fœtid fluid, which in some parts of its course was tinged with hæmatin; ileum red in colour (not inflamed), and thickened; mucous membranes covered with a thick furfuraceous deposit (degenerated epithelium); portion of villous mucous membrane of stomach thickened and of a dull red colour (intermixed with the contents of stomach I discovered quantities of the capsule of the locust bean); kidneys congested; the internal organs had commenced to decompose; the mucous membrane of larynx intensely scarlet, and like the pathognomonic scarlet colour of this part in Rabies, mucous members of congested lung turning green." Professor Walley was of opinion that these symptoms and *post-mortem* appearances were not purely to be ascribed to the irritant poisonous action of seeds of the castor oil plant in the cake, but that certain of them were referable to a degree of blood-poisoning, induced by a fermentative change taking place in the ingredients of the cake. The cake at the time had a peculiar, unpleasant odour, which it has since lost.

The CHAIRMAN observed that the first-mentioned case seemed almost unique.

A paper by Professor VAUGHAN, on the "Educational Prospects of the Profession," was deferred till next meeting, owing to the small attendance.

CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary meeting of the above Society was held on Tuesday, May 8th (instead of the 3rd. as previously announced), at 10, Red Lion Square, W.C., at 7 p.m., George Fleming, Esq., Vice-president, in the chair.

Professor WALLEY, of Edinburgh, brought a specimen of congenital malformation of the cervical vertebræ—the dentata and third cervical being fused in a sharp curve, and showing a constriction in the canal at the posterior part of the dentata; no osseous disease was apparent. The subject was a horse aged fourteen years, that was, when foaled, presented with the head first and the forelegs tucked up in the hollow of the neck. He was sold for £48, and afterwards for £8, the later purchaser working him during ten years. He had the reputation of being one of the strongest horses in Leith: during life the neck presented an extraordinary curve.

The Professor next read a paper on Cardiac Hæmatomata and Thrombi, illustrating it with specimens of *ante-mortem* clots.

The CHAIRMAN remarked upon the importance of the subject, and the little knowledge possessed upon it. It had important aspects from a legal point of view, and showed the necessity for investigating the condition of the pulse and heart when examining a horse for soundness, as the regulation of the heart's action depends upon the condition of the valves, chiefly; and from the length of time required in the formation of the tumours, also the clots, it would to a certain extent relieve the vendor of a responsibility and throw it on the veterinary examiner. It would be an improvement if the same laws prevailed here as exist on the Continent, guaranteeing the animal for only a limited period. The condition of the endocardium had probably much to do with clot formation—any roughness being likely to lead to fibrinous deposition of plastic material in a stratified form,—and if these roughnesses were about the valves the symptoms must be more marked than if they existed only on the walls, accepting the Professor's theory. He had seen many specimens, but none so large, and did not doubt their fatal termination.

The SECRETARY stated that he had, in attending some hounds in the country, the subjects of acute Pneumonia, made a *post-mortem* of one that had died three hours prior to his visit, and found a septic condition of blood, with a long continuous clot in the heart, the lungs being the worst he had seen.

Mr. HOWARD, in a case of Pneumonia that occurred in his practice some three years since, found a portion of fibrous and fatty material attached to the covering of the tricuspid valve; and shortly afterwards being called to a rabid dog, he found large clots, bearing out the Professor's views, contained in the auricle and ventricle (right side), which were fibrinous and mixed with broken-down blood; whether they were a cause of the disease or a complication, he was uncertain.

Mr. STEEL was pleased to note the stress laid upon the influence of blood affections in the formation of coagula.

Mr. BURRELL thought blood clots sometimes arose independently of disease, from accidents, etc., as pricks of nails; and in cases of weak circulation, when the valves did not get opened thoroughly, a certain amount of blood got coagulated at the rear of such valves, which, with returning health and increased flow, was carried into the circulation. It frequently happened that horses at rest exhibited no trace of heart disturbance, but after walking briskly it was perceptible enough.

The PROFESSOR related a case of a Colley dog, the subject of Distemper followed by Zymotic Pneumonia, from which he apparently recovered; but dying suddenly, it was found that a rupture of the chordæ tendinæ had ensued. There was nothing else to account for death. He referred again to the legal aspect of the subject, and hoped at no distant date for a reform in the laws of warranty.

A vote of thanks to the Professor and Chairman closed the proceedings.

Present—Thirteen Fellows and three visitors.

JAMES ROWE, JUN., *Hon. Sec.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE fifty-first quarterly meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening, May 11th, 1877, the President, Mr. Woods, in the chair. The following members were also present: Messrs. Heyes, Morgan, W., J., and T. Leather, C. W. Elam, Hutcheon, Moore, Whittle, Welsby, Rothwell, and the Secretary.

Letters of apology for non-attendance were received from Professor Walley, Messrs. Peter Taylor, T. Taylor, E. Faulkner, and W. A. Cartwright.

The minutes of the previous quarterly meeting, and also those of the special meeting, were read and confirmed.

The following new members were duly elected: Messrs. George Cave, Liverpool; W. W. Townson, Liverpool; W. J. T. Moore (Chief Inspector of the Privy Council for the Port), Liverpool; Joseph Hutchin, Woolton.

Mr. WELSBY gave the following description of a case of splenic disease, and exhibited morbid specimen relating thereto:—

"The case was that of a black cart-mare, fourteen years old, which was brought to me for treatment in July of last year. The history of the case, according to the owner, was that she had been ailing for two or three months; she was very dull, and getting thinner, with a very capricious appetite; her appearance was that of emaciation, rusty wiry coat, hide-bound, pale mucous membranes, and a general anæmic condition. In my examination I found a diseased molar tooth, which I extracted, and prescribed tonics, nutrients, and stimulants.

"In a fortnight or so after this she was brought to me again, very little

changed, if at all; the pulse was very feeble, about 36 beats per minute, and intermittent. From this time she remained with me until she died, which was nearly three months. I continued my former treatment, with the addition of cod liver oil, but she slowly and gradually got worse. She could only walk very slowly, and in doing so stumbled a good deal, which I attributed to loss of power and tone in the muscular system; constipated bowels, due no doubt to a want of tone in the intestinal muscular coat. She appeared very thirsty, but never took more than a couple of swallows at one time. I always found her standing—never lying down—in the same corner of the box; but the most characteristic symptom she presented, and which should not be forgotten, was that of alternately extending her fore-legs to the fullest extent and knuckling over at the fetlock joints, with her nose close to the ground. This position she would maintain, if not disturbed, for hours together.

"Venous murmurs could be distinctly heard at the breast, and particularly at the base of the jugulars—caused, no doubt, by the current of blood in its dilute and diminished condition producing vibrations and sonorous gushes, which would not be occasioned by the circulation of a fluid of greater density.

"A *post-mortem* examination revealed a beautiful specimen of pure Lymph-adenoma of the spleen, which contained many tumours, one of which was of exceeding large size, measuring fourteen inches in circumference."

In the discussion following on this case, several members related cases of excessive enlargement of the spleen, but no one present had met with a similar case to Mr. Welsby's.

Mr. MORGAN regretted the absence of Mr. W. A. Cartwright; for that gentleman had many years ago published cases and remarks upon some diseases of the spleen.

With regard to the functions of the spleen, Mr. REYNOLDS considered that, under ordinary circumstances, it was instrumental in regulating the quantity of red corpuscles of the blood circulating in the systemic vessels.

Mr. WELSBY related a case of fractured lumbar vertebræ, wherein the subject travelled a distance of four miles after the accident.

Mr. REYNOLDS related a case of ruptured aorta.

The PRESIDENT gave a description of a case of Cyanosis in a foal now under his care. The symptoms presented were semi-coma, accelerated respiration, coldness of surface of the body and extremities, bluish colour of the visible mucous membranes, especially the buccal membrane, and inability to retract the tongue when withdrawn from the mouth. The symptoms were scarcely apparent when the subject was standing, but they became much intensified on the animal lying down.

Interesting discussions followed the relation of the above cases.

It was decided to hold a meeting of the Association on Thursday, July 12th next, and to invite the attendance thereat of members of the Yorkshire, Manchester, and Midland Counties' Associations.

An executive committee was formed to carry out details for the proposed meeting, and to make arrangements for a dinner to take place after it.

RICHD. S. REYNOLDS, *Hon. Sec.*

PATHOLOGICAL SOCIETY OF LONDON.

Alterations in the Nerve Structures in Hydrophobia.

AT the meeting of this Society held in May, Dr. GOWERS showed an extensive series of microscopical sections, exhibiting the Changes in the Medulla Oblongata and Spinal Cord in four cases of Hydrophobia—one of which occurred at Hertford, another at Sheffield, and two in London. The changes

found resembled in the main those which have been described by Benedict as occurring in the convolutions of the brain of the rabid dog; and by Dr. J. Coats in the lower centres of man. In all four cases the vessels of the grey matter were greatly distended,—the distension being greatest in the medulla, near the grey nuclei, in the lowest part of the fourth ventricle. In three of the cases the larger veins in this position presented aggregations of small cells within the perivascular lymphatic sheath. These were in some cases as a single layer; in other cases densely packed, so as to compress the vessel they surrounded. In a few places these cells extended beyond the limits of the sheath. In some parts similar cells were scattered through the tissue among the nerve elements, and in some places—chiefly in and near the hypoglossal nuclei—there were dense collections of these cells, constituting, in fact, "miliary abscesses." Similar smaller collections were seen among the fibres of origin of the hypoglossal and glosso-pharyngeal nerves. Adjacent to many vessels were areas of granular degeneration. In two of the cases many of the larger vessels, chiefly veins, contained clots, parts of which were evidently of *ante-mortem* formation, portions of the clot being different from the rest, darker, granular, or spongy in aspect. By some of these the appearance of embolism was closely simulated. Attention was drawn to the indications of formation *in situ* afforded by the gradation between the normal and the altered clot, and by the curved lines of pressure to which the clot had been exposed immediately after its formation. One specimen presented thickening of the inner coat of a vein opposite the older part of a clot, and the clot was reduced in size correspondingly, if formed secondarily to the change in the inner coat of the vein. In this vessel there were round cells in the perivascular sheath, and leucocytes accumulated within the old clot, and within the substance of the swollen inner coat,—affording strong evidence that the cells outside were also migrated corpuscles. The nerve-cells presented comparatively slight changes, being merely slightly swollen and granular in some places, and surrounded with granular degeneration here and there. These changes were most intense in and about the hypoglossal, pneumogastric, and glosso-pharyngeal nuclei; slighter in the nuclei of the auditory, facial, and fifth nerves; slighter also in the cord; and still slighter in the upper part of the pons. Dr. Clifford Allbutt had also found less definite changes most distinct in the medulla. In Dr. Gowers' cases, the change reached its maximum in the region of the "respiratory centre" in the medulla, which includes that prolongation downwards of the facial nucleus which subserves the movement of the lips. The paroxysms of spasm of Hydrophobia are paroxysms of respiratory spasm. In the case in which the change in the respiratory centre was most intense, the paroxysms consisted of spasm of the diaphragm, and an inspiratory effort in which the clavicles almost touched the lower jaw, and the lips were pressed against the teeth. Further evidence of the over-action of the hypoglossal nucleus, in which the changes were so marked, was afforded by one case in which a noise as of the tongue being smacked against the roof of the mouth occurred at the commencement of each spasm. Dr. Gowers concluded by alluding to the difficult question of whether these vascular changes are the initial lesion in the nerve-centres, or are secondary to the irritation of the nerve-elements by the blood poison. It was certain that embolism played no part in the process. The coagulation in vessels was also not essential; while in one case the absence of cell-infiltration showed that dilatation might be the only morbid state of the vessels. On the other hand, the changes in some of the clots, in cases in which the symptoms lasted only three days, showed that considerable vascular changes must have occurred very early in the disease.

Dr. CRISP asked whether his researches had led Dr. Gowers to believe that there was any special lesion characteristic of Hydrophobia. Dr. Gowers replied in the negative.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the monthly council meeting held on June 6th, Lieutenant-General Viscount BRIDPORT stated that Professor Brown had sent the accompanying report to the Committee, detailing the circumstances attending the only two cases of Cattle Plague which had occurred since their last meeting. The Committee, in presenting this statement to the Council, ventured to express their satisfaction with the procedure of the Privy Council, and their belief that the present state of things justifies a hope that the country may shortly be declared free of Cattle Plague.

Report of Professor Brown.

"Two outbreaks of Cattle Plague have been reported since the last meeting of the Veterinary Committee on May 1st: one in Lincoln Street, Hull; and the other in Whitechapel. In both cases the evidence was of a character to justify a doubt as to the true nature of the disease.

"The outbreak at Hull was reported to the Veterinary Department on May 5th, and Mr. Duguid proceeded to investigate the case without delay. According to his report, the symptoms exhibited by the diseased animal were not sufficiently marked to enable him to form an opinion, but after a *post-mortem* examination he was satisfied that the disease was Cattle Plague; the four cows which were in the shed with the diseased animals were immediately destroyed, and the premises declared infected. An inquiry was instituted at once, but nothing was discovered which in any way connected the outbreak with centres of infection which had previously existed in the borough. No case of Cattle Plague had been reported in Hull for a period of six weeks, and a careful inspection of all the cow-sheds did not result in the discovery of any circumstances which would lead to a suspicion that a fatal disease had existed during that interval. If Cattle Plague had prevailed, some of the sheds would certainly have been found empty. The cow which was reported ill on May 5th was bought of a dealer on April 22nd, and two other cows which were brought into Hull with her remained healthy. The four cows which were in the shed with the diseased cows from Wednesday, May 2nd, when the first signs of illness were observed, to Sunday, May 6th, showed no indication of being infected with Cattle Plague, and no further outbreak of the disease has occurred in Hull.

"The outbreak in Baker's Row, White's Row, Whitechapel, has excited a good deal of attention, in consequence of the statement which was made at a meeting of the Board of Works, by the Chairman of the Cattle Plague Committee, to the effect that the Board's inspector had reported the existence of Cattle Plague, while the officers of the Privy Council considered the disease to be Pleuro-pneumonia. The attention of the Board of Works has been called to the fact that the telegram which was sent by their inspector to the Veterinary Department contained no reference to Cattle Plague, but merely stated that some animals required to be inspected, and that the carcase of one of them, which had been slaughtered the previous day, was at Mr. Cave's, butcher, Dempsey Street, Whitechapel. The chief inspector at once proceeded to the butcher's premises, and was shown the carcase, which was dressed in the ordinary way, and at the same time some lungs were produced, in one of which (the left one) the disease, Pleuro-pneumonia, had

advanced to such an extent that nearly the whole of the structure was implicated.

"On visiting the shed whence the animal had been removed, the chief inspector found three cows presenting symptoms which led him to suspect Cattle Plague, and he therefore placed the premises in charge of the police, and took possession of the carcase at the butcher's; the hide and offal had been removed, and it did not appear that anything had been disinfected.

"The three cows in the shed in White's Row, and two others, which the owner had kept out of the way in another part of the premises, were subsequently seen by Professor Simonds; and although the evidence was not quite satisfactory, it was deemed advisable to declare the existence of Cattle Plague, and the animals were accordingly destroyed. It may be observed that Pleuro-pneumonia was declared by the inspector of the local authorities to exist in the premises in White's Row on April 24th, on which date there were ten cows in the sheds.

"For some weeks past the inspectors of the Privy Council have been engaged in directing the cleansing and disinfection of the premises in which Cattle Plague had existed; this work is now completed. It is, however, intended to keep all these premises under observation for some time after the introduction of fresh stock."

This report was adopted after the following discussion had taken place.

Lord POWIS mentioned that the restrictions which had been imposed in many cases were now being removed, in consequence of the cessation of fresh cases of Cattle Plague.

Lord ESLINGTON, M.P., and Mr. WAKEFIELD, having asked for information in reference to the Whitechapel case of alleged Cattle Plague,

Professor SIMONDS stated that in consequence of what had been considered the doubtful character of the Whitechapel case, he had been requested to examine the animals as well as the carcase of one which had been slaughtered. This he was shown, together with the lungs, which were distinctly affected with Pleuro-pneumonia, but he had great doubt whether the latter had been taken out of that carcase. On visiting the animals which were ill in the shed, he found there three cows, two of which were unwell, while the other was perfectly healthy. One of these animals gave unmistakable evidence of disease of the lungs, and the other unhealthy animal gave indications of Cattle Plague. The animals were placed under the care of a policeman until the following day, when he again visited the shed, and found that two other cows had been secreted—*i.e.*, had been taken from the animals he had seen the previous day, and put in another part of the premises, where one would scarcely have supposed any man could put two cows. This made him more suspicious as to what was going on, and on examining these two cows, he found evidence of serious illness, and symptoms allied to those of Cattle Plague. At this time there were only four animals left—one he had seen on the previous day being now dead. This animal was the one to which he had referred as exhibiting symptoms of disease of the lungs. He proceeded to make a *post-mortem* examination; and the indications that examination afforded were such as would only lead one to suspect the existence of Cattle Plague in the remaining animals. Under the circumstances, it was deemed right and prudent to take the same course as would have been adopted if there had been no doubt that the disease was Cattle Plague.

Mr. JABEZ TURNER wished to ask Professor Simonds for an expression of his opinion whether it was possible for Cattle Plague and Pleuro-pneumonia to exist in the same animal at the same time. He had heard it frequently stated in the country that many animals which had been killed as suffering from Cattle Plague were in reality only affected with Pleuro-pneumonia.

Professor SIMONDS said he had no hesitation in answering the question. There could be no doubt whatever that the two diseases could exist in an animal at the same time. An animal suffering from Pleuro-pneumonia would sometimes live two or three weeks, and, if exposed to the infection of Cattle Plague, it would very likely take it, and die from Cattle Plague, and not from Pleuro-pneumonia. Animals also in which the infecting materials of Pleuro-pneumonia were incubated were equally liable to the infection of Cattle Plague.

The Committee had also received the following report from their inspector, Mr. Duguid, in reference to the Hull case:—

"At the request of Professor Brown I visited Hull on May 6th to examine a reported case of Cattle Plague on the premises of Mr. Kirby, Lincoln Street.

"The animal was one of a stock of five cows, and had been examined by the local inspector, Mr. Freeman, and also by another veterinary surgeon, and pronounced to be suffering from Cattle Plague.

"The cow showed some, although not all, the symptoms characteristic of the disease, and I had some doubt whether she was really suffering from Rinderpest or not; but on making a *post-mortem* examination my doubts were removed, and I then confirmed the opinion of the local inspector, and the other four animals in the shed were slaughtered by order of the local authority.

"The cow had been bought from a dealer only a short time previous, but the fact that two other cows that had been brought into Hull along with her remained healthy, precludes the idea of the contagion being brought by her into the shed.

"A period of six weeks had elapsed since a case of Cattle Plague had been seen in Hull, and no light has as yet been thrown on the source of the contagion."

Mr. DUGUID presented the following report:—

"*Pleuro-pneumonia Experiments.*

"In the report presented to the Royal Agricultural Society in December last on the Pleuro-pneumonia experiments being conducted at the Brown Institution, it was stated that as soon as all the animals had been inoculated, or exposed to the contagion of Pleuro-pneumonia by contact with the organs of diseased animals which had been slaughtered, they would then be subjected to cohabitation with animals suffering from the disease. The existence of Cattle Plague in the Metropolis, and the consequent necessary restrictions on the movement of animals within the metropolitan area, have for some time past precluded the movement of the experimental cattle into infected sheds, and therefore the final and important part of the series of experiments has been delayed. Professor Brown has kindly offered to assist in obtaining infected premises for this purpose as soon as the Cattle Plague regulations cease, and it is to be hoped that in a short time the present series of experiments will be concluded.

"The whole of the animals have been inoculated with the exudation liquid obtained from Pleuro-pneumonia lungs, most of them in more than one way; and some have, in addition, been brought in contact with the lungs of diseased animals that had been slaughtered while suffering from the disease. None of them have become affected with Pleuro-pneumonia as the result of these inoculations, and with one exception they have all remained in good health. The exception referred to is the case of one cow, which died on the twenty-fourth day after inoculation; but the cause of death was not Pleuro-pneumonia.

"*Foot-and-mouth Disease.*

"Although at first some difficulty was experienced in communicating this disease, four of the experimental animals have become affected with it by feeding them with hay moistened with the saliva of diseased animals. And had the virus of Foot-and-mouth Disease been more readily obtained, the others would in all probability have been infected before the present time. The first opportunity that offers, they will be subjected to the influence of the virus."

Cattle Plague Evidence.

Mr. RIDLEY, M.P., reported that the Committee met on Wednesday, May 2nd, at two p.m., when he was elected Chairman, and the Committee roughly sketched the following programme of what they considered should be the heads of inquiry by the Select Committee, and resolved to inform themselves as far as possible of the decision come to by that Committee as to the scope of their inquiry, and the nature of the evidence they intended to take, with a view to considering their own further action :—

"A. *Foreign Live Stock.*

"Principal sources of supply of foreign live animals.
"Regulations in different countries with reference to exported stock.
"Manner in which those regulations are carried out at ports of embarkation.
"Proportion of diseased cargoes from each country.
"Method of transit from exporting to importing countries.
"Reception and treatment at ports of debarkation.
"Facts relating to the recent outbreak of Cattle Plague.
"Importation of Pleuro-pneumonia.
"Importation of Foot-and-mouth Disease.
"Estimate of loss in home production of meat and milk.
"Deterrent effect of imported diseases on the home breeding and feeding of stock.

"B. *Foreign Meat Supply.*

"Existing supply.
"Comparison of the condition of foreign, American, and Scotch meat.
"Recent development of the American trade, and probability of summer supply.
"Effect on the price of meat.
"Probabilities of future meat supply, especially what proportion of foreign live stock would be likely to be sent here as dead meat if their importation as live animals were prohibited.
"Importation of hides, horns, etc.
"Regulations that may be necessary to prevent importation of diseases with hides, etc.

"C. *Amendment of the Act of* 1869."

Since this time the Committee had been favoured, by the courtesy of the Chairman of the House of Commons Committee, with a copy of the shorthand writer's notes of the evidence given before that Committee. The Committee again met yesterday (Tuesday, 5th inst.), and discussed the various heads of their programme, in connection with the evidence already given before the House of Commons Committee. They made one or two additions to that programme, and agreed upon the names of witnesses whom they thought it would be desirable should be examined by the Select Com-

mittee in case it should be necessary to supplement the evidence brought from other sources before them. In view of some necessary clerks' work, in digesting some of the evidence which might be brought forward, the Committee asked for a grant not exceeding £25, to be placed in the hands of the Secretary.

This report was adopted.

Jurisprudence.

THE FLESH OF TUBERCULOUS CATTLE AS FOOD.

AT the Borough police court, Rotherham, on Friday, the 28th April, before the Mayor (B. E. Chambers, Esq.), and H. Jubb, Esq., Mr. Packwood, on behalf of the urban sanitary authority, made application for an order for the destruction of the carcase of a beast which was on view in the adjoining room, belonging to Mr. W. Downs, butcher, Effingham Street, Rotherham. Mr. F. Parker Rhodes defended.

Mr. Packwood stated that on the previous Wednesday the attention of the Inspector (Mr. Parkin) was called to the carcase of a beast, which was in the slaughterhouse of Mr. Downs. He informed Dr. Hardwicke, the medical officer of health, and other gentlemen; and Dr. Hardwicke, Mr. Campsall, veterinary surgeon, and Mr. J. Wood, meat and food inspector, Sheffield, examined the carcase; and in their opinion, although the carcase might present a healthy appearance, the animal had suffered from a wasting constitutional disease. The heart was studded with tubercles, and the beast had also suffered from Pleurisy on the right side, and the liver was also studded,—from which they came to the conclusion that the meat was unfit for human food. There would be some contention as to whether the meat of an animal suffering from this disease would be really unfit for human food, but he would ask the Bench, after hearing the evidence, to make an order that the carcase should be destroyed. He did not ask a penalty, as the defendant had not acted *malâ fide*, but had bought the animal at the Wakefield market, paying a good price for it, and believed it to be perfectly sound.

Mr. Chas. E. Parkin, Inspector of Nuisances for the urban sanitary authority, said that on the 25th of April his attention was called to the carcase of a beast in the slaughterhouse. As far as the carcase itself went, he had no fault to find, except that it showed traces of disease by the adhesion of the lungs to the right side. On the right side there was a considerable amount of scrofulous deposit. The heart was entombed in a diseased case. The liver was diseased; and after examining it carefully, he saw that the disease had made such headway with the lungs, heart, and kidneys, that he thought it his duty to call in the medical officer of health, the veterinary surgeon, and other practical witnesses,—all of whom examined the carcase. —Examined by Mr. Rhodes: He (Mr. Parkin) would not like to pass an opinion as to whether the meat was fit for food or not. He had never seen so bad a case. The livers of Irish cattle were frequently affected in a similar manner.

Dr. Hardwicke, the medical officer of health, said that on the previous day he was called in by Mr. Parkin to see the beast in question. He examined the carcase, in company with Mr. Campsall, Mr. Parkin, and Mr. Wood, and found the lungs studded with tubercles, and a good deal of tuberculous deposit in the pericardium. There was a good deal of the

deposit in the tissue of the liver, and he also found a considerable amount inside the right ribs, some inside the left ribs, and also in the mesentery—the connecting membrane of the bowels. He should certainly consider it to be suffering from a constitutional disease. He agreed with Mr. Hill (an authority on the question quoted by Mr. Packwood) that the flesh of an animal suffering from Tuberculosis, Scrofula, or Consumption, was unfit for human food when it reached the extent of the one in question. If it had gone on he should consider that the animal would have died from Consumption. There was not much wasting, but the disease would make the meat unfit for human food.—By one of the Bench: He could not tell how long the animal had been suffering, but it would be months, perhaps years.—By Mr. Rhodes: Beyond what he had described there were no other indications which could be observed by the eye in any other parts of the body. The disease began with the internal organs, making the blood of the system poorer, extending to the different parts of the body; and the result was a wasting away, and in after time death. It was possible, in a very bad case, to find scrofulous disease in the muscular structure of the body. The muscular structure looked pretty healthy. He gave his opinion as to the general appearance of the internal organs. If a person ate a portion of the meat, the active agent which would produce disease in the human being was tubercle, or tubercular deposit. It was possible that there should be such a disease in the heart and lungs without being in the flesh, as it attacked the muscular tissues last. He had not examined the carcase microscopically, but he had examined it sufficiently to establish the fact in his own mind that to eat of the flesh would be full of risk, as the meat was unfit for human food.

Jonathan Wood, meat and food inspector for the borough of Sheffield, said that he went into the slaughterhouse and examined the carcase. If he had seen three quarters *only*, it would not have challenged his attention, and he would have taken no notice of it. He thought it decent meat; but when he looked at the fourth quarter, he saw that adhesion had taken place. The heart was encased *very* thickly in scrofulous matter. He got a knife and cut into it, but had some difficulty in doing so, as it had become ossified. The lungs were one mass of tubercular deposit, not of the ordinary "grapy" kind, but assuming a liquid form of the consistence of "batter-pudding." There were two kinds of hoose—the wet and the dry hoose. In the carcase in question it was the wet hoose.

Mr. Campsall, veterinary surgeon practising at Rotherham, said he examined the carcase with the other witnesses. There was a large quantity of tubercular deposit in the tissues of the pericardium, liver, and lungs; also some tubercles at the back part of the tongue. There was Pleurisy on both sides, but particularly on the right side, which was studded with tubercles. He considered the meat to be unfit for human consumption. He considered the animal had suffered from a constitutional hereditary disease, from which it could not possibly recover, and that it was only a question of time ere it would waste and die. If the meat itself was free from tubercular deposit, he did not think that it could be eaten with safety.

George Wildsmith, butcher, Rotherham, said he had been a butcher for twenty years. He had no doubt that there was disease in the lungs and heart of the beast in question. In answer to Mr. Rhodes, he said he cut up hundreds of beasts, and had "skinned" the ribs of many. He should have done that if it had been his.

This concluded the case for the applicants, and

Mr. Rhodes, in defence, said he felt that the case was one of no little importance and would have a considerable effect on the supply of meat in the town and neighbourhood. Beasts suffering from the same kind of disease

were killed not only in Rotherham, but in every town throughout the kingdom, and formed a very large proportion of the cattle which went into the market. He believed he was within the mark when he said that about ten per cent. of the beasts suffered from that disease. According to Dr. Hardwicke's evidence, if the tubercular deposit did not extend into the meat, it might be eaten with impunity. Dr. Hardwicke said it was unfit for food because it was dangerous, but there was no positive certainty that disease would follow the eating of the meat. Before they destroyed any man's property, they must be satisfied that there was absolute danger. He contended that the applicants had not disclosed such a case as to call upon the Bench to destroy the carcase as being unfit for human food. They must show that danger would arise from the eating of the meat. The carcase had been examined microscopically, and he should call Dr. Branson and Dr. Cobban, who would say that the meat was perfectly fit for food, and that only the internal organs were diseased. All the butchers would say that this kind of disease was prevalent to a great extent in cattle, and it was merely a question of degree. The beast had been bought at the Wakefield market, and a fair price had been paid for it.

Dr. Branson said he had examined and submitted certain portions of the animal to microscopical observation, and he agreed with Dr. Hardwicke and Mr. Campsall that the internal organs were suffering from the disease. In his judgment the meat of the beast, apart from the internal organs, was not affected with the disease, and was quite fit for food. It was quite possible for tubercular deposit to exist to a large extent in the internal organs, and yet not exist in the other portions of the carcase. The meat might be eaten in perfect safety. He examined a number of portions of the carcase indiscriminately, and in none, except in the internal organs, did he find any tubercular deposit.

Mr. Packwood.—"What experience in this direction have you had in your professional career?"

Witness.—"So far as cows are concerned, this is my first experience."

Dr. Cobban, medical officer for the rural sanitary authority, said he had examined the carcase of the beast in question, although not microscopically. There was no existing disease in the carcase, except that which was present in the internal viscera. He took one portion of the lymphatic tissues home with him and examined it, and found some traces of disease in it, but none in the muscular tissues. He also satisfied himself that the disease was not of recent standing. The effect on an animal suffering from Tuberculosis would be a gradual wasting away. An animal could be suffering from tubercles in the liver and heart, and yet the blood could be not impregnated.

The magistrates retired, and subsequently gave their judgment in favour of the defendant, remarking that there was not sufficient evidence to warrant them in condemning the meat as unfit for human food.

[This case has given rise to a considerable amount of excitement and discussion in Rotherham, and we have been asked to express an opinion as to whether the flesh of animals affected with Tuberculosis is suitable for human food. This is a question which properly should be put to the Veterinary Department of the Privy Council; but as that Department only makes itself acquainted with three or four diseases of animals, and leaves other serious scourges out of sight, the public have to trust, for the most part, to those who know little if anything of animal disorders, for sanitary information which should certainly be afforded by the veterinary profession.

Tuberculosis is evidently largely on the increase, and there appears to be good evidence to prove that it is transmissible, not only among bovine animals by cohabitation, but to other animals by inoculation, and by the ingestion of

tubercular matter, as well as by uncooked milk from diseased cows. If several species of animals can be so infected, why not mankind? Thorough cooking may, of course, prove a safeguard against danger; but we must confess that we are averse to sanctioning the issue of the flesh or produce of tuberculous cattle as food, and energetically enter our protest against that of animals in a cachectic condition being so utilised. The apologists for the use of this flesh assert that because the disease is so common, it would be wasteful to condemn so much food; but this argument will not for a moment bear examination. The good condition of an animal is not always a guarantee as to the soundness of its flesh, as we have seen cattle tolerably fat and healthy-looking, yet which, when killed, were found to be seriously affected with Tuberculosis. In one case the deposits were widely diffused, one large mass being lodged in the lymphatics of the neck. This is a blood disease, and must, more or less, affect all the tissues, secretions, and excretions. The glandular structures are particularly liable to be affected; and in the present number of the *Veterinary Journal*, Mr. Hill gives two most interesting cases, which have their value for sanitarians. We hope, in an early issue, to give a record of a large series of very valuable experiments performed on animals of different species, and which prove, in the most convincing manner, the transmissibility of the malady by inoculation and ingestion.

With regard to our opinion as to the utilisation of the flesh of tuberculous animals as food for mankind, we are ready to confess that we do not look favourably on allowing such flesh to be eaten, and should have no hesitation in condemning the carcases of animals in which there was any tendency to diffuse Tuberculosis, or which offered signs of tubercular cachexia.

In this we find that we are supported by the opinion of the Medical Department of the Local Government Board, furnished to Dr. Hardwicke, of Rotherham, in 1873.

(Copy.)

"Local Government Board (Medical Department), Whitehall, S.W.,
"*20th September*, 1873.

"Sir,—I am directed by the Local Government Board to acknowledge the receipt of your letter of the 13th inst., and to state, in reply to your inquiry, that they are advised that the carcase of a cow, of which the lungs are full of tubercles—the liver also containing tubercles—cannot properly be used for food for man.

"Your obedient servant,
"Edward C. Seaton.

"J. Hardwicke, Esq., M.D., Medical Officer of Health, Rotherham."]

Army Veterinary Department.

Gazette, May 22.

Veterinary-Surg. of the First Class John Tatam, from Royal Artillery, to be staff Veterinary-Surg., *vice* William Varley deceased.

Gazette, May 29.

Veterinary-Surg. John Field, half-pay, resigns his commission.

Gazette, June 8.

1st Regiment of Dragoon Guards.—Veterinary-Surg. of the First Class L. Byrne, retires on half-pay.

W. S. Adams, Royal Artillery, is to officiate as Veterinary-Surg. to the Remount Depôt, Oosoor, during the employment of Veterinary-Surg. Shaw on other duty.

Obituary.

THE following deaths have been reported to the Registrar of the Royal College of Veterinary Surgeons :—

	GRADUATED
Mr. Alex. Smeaton, Pathhead Ford, Edinburgh . .	April, 1834.
„ J. Whitmore Garrad, East India Company's Service	May, 1853.
„ H. C. Hulse „ „ „ „ .	Feb., 1828.
„ R. Willis „ „ „ „ .	May, 1833.
„ G. Corbett, Worcester	May, 1822.
„ G. T. Vesey, Christchurch, Hants	April, 1872.

The Registrar expresses his regret that the name of Mr. Thos. Greaves, jun., of Burnley, should have appeared in our last obituary list. The mistake arose in consequence of a "returned letter" addressed to Mr. Greaves, having been inadvertently marked "deceased" by the Post-office authorities.

The French veterinary schools have been very unfortunate lately, those of Lyons and Toulouse having lost two eminent teachers—Rodet and Gourdon ; and now we have to record the death of M. Serres, who belonged to the last-named school, and was Chief of the Clinical Service and Professor of Surgery. Professor Serres had published numerous *mémoires* on pathology, surgery, and hygiene, as well as reviews in the journal of the Toulouse school, and was the author of a treatise on the castration of the domesticated animals. His untimely decease appears to have caused universal regret among our French colleagues, and especially among those in the south of France.

Notes and News.

DOG LICENCES.—By a return dated the 16th of April, 1877, and just issued to the House of Commons, it appears that in 1867 the number of licenses granted for dogs was 828,320, while the number assessed to the dog-tax was 445,656—a little more than half. At the present time it is reckoned that the number of dogs for which licences have been granted is about one-third more than the number assessed to the dog-tax.

CATTLE SLAUGHTERED IN EUROPEAN RUSSIA.—An arrangement has been made, which is to continue in force for three years, for the compensation by the State of owners of cattle which may be compulsorily slaughtered within the boundaries of European Russia, owing to the prevalence of Cattle Plague. The money required for this purpose is to be raised by a special tax upon all descriptions of draught animals.

HORSES IN EUROPE AND AMERICA.—The number of horses in the various countries of the European Continent and in the United States has been estimated as follows :—In Russia, 16,160,000; North America, 9,504,200 ; Germany, 3,352,231 ; Great Britain, 2,790,851 ; France, 2,742,738 ; Austro-Hungary, 3,569,434 (of which 2,179,811 belong to Hungary) ; Italy, 657,544 ; Norway and Sweden, 655,456; Spain, 382,000; Denmark, 216,570; Belgium, 272,163 ; Holland, 260,056 ; Switzerland, 100,934 ; Greece, 98,938 ; and Portugal, 79,616 ; making a total in the countries mentioned of 40,854,840. The proportion of horses to each thousand of the population is 227·05 in Russia, 244·16 in America, 175·55 in Denmark, 146·99 in Hungary, 114·88 in Sweden,

86·10 in Great Britain, 81·64 in Germany, and 18·25 only in Portugal. Of mules there are found 1626 in Germany, 303,775 in France, 214,935 in Austro-Hungary (of which 3266 are in Hungary proper), 292,868 in Italy, and the large number of 6,665,472 in Spain.

TRICHINOSIS IN SAXONY.—This parasitic disease has shown itself with renewed intensity at Neugersdorf, in Saxony. On October 26th, 1876, the district physician was officially warned that Trichinosis had appeared in his locality, and he soon had reason to confirm the diagnosis of the physician of Neugersdorf. Forty-five persons were attacked, and the principal symptoms were œdema of the face, pains in the neck, arms and legs, anorexia, and sleeplessness. On September 22nd, the disease showed itself in the *clientèle* of Dr. Ruppreiht, at Hettsledt. The outbreak ran through its different phases in fourteen days, without any serious results. The two patients had each eaten sixteen grammes of the infected flesh on August 26th. The number of trichinæ in the flesh was estimated at one to every centigramme, so that the patients must have ingested about 1600 of these creatures. Hence it may be computed that each of them harboured 1,600,000 trichinæ, if we admit that in the four weeks the nematode entozoa could be multiplied a thousand times. As it requires 1,000,000 trichinæ to produce the slightest symptoms of Trichinosis, the manifestations of infection could not be declared before three weeks after eating the flesh. The disease was recognised twenty-five days after the trichinosed pork had been partaken of, and the symptoms—the rheumatismal form—continued for fourteen days. The butcher who sold the flesh was condemned to a month's imprisonment.

SALICYLIC ACID AND SWINE PLAGUE.—Haubold, a Saxon veterinary surgeon, successfully employs this acid internally, and also in the form of enemas (1 to 250 of water), in the treatment of this destructive malady. Brauer also employs it in the treatment of Auricular Catarrh in the dog, along with sulphuric ether. Five centigrammes of the acid to five grammes of water are sufficient for one ear.

LYONS FACULTY OF MEDICINE.—By a decree of April 24th, 1877, Professor Chauveau, Doctor of Medicine of the Faculty of Paris, Director of the Lyons Veterinary School, Corresponding Member of the Institute, and Associate of the Academy of Medicine, has been named Professor of Experimental and Comparative Medicine in the newly-created Faculty of Medicine and Pharmacy of Lyons.

VETERINARY HONOURS.—The Academy of Sciences of Paris has awarded the veterinary Professor A. Sanson 1500 francs for his "Experimental Researches on Pulmonary Respiration in the Larger Domestic Mammifers." —The same learned corporation has awarded the experimental physiology prize to M. Morat, professor of physiology at the Medical Faculty of Lille, and M. Toussaint, professor of anatomy and physiology at the Toulouse Veterinary School.—The Veterinary Institute of Dorpat, Russia, has bestowed its honorary diploma on a select number of veterinarians in France, Germany, Italy, and Belgium.

RABIES FROM THE BITE OF THE SKUNK.—Colonel Dodge, in his very instructive and interesting work, the "Hunting Grounds of the Great West" (London, 1877), speaks of the skunk, a carnivorous creature and a denizen of the North American plains, and alludes to its boldness in venturing into camps and tents in search of food while the inmates are asleep; should nothing better be in its way, it will commence devouring the hand, face, or any uncovered part of the sleeper. "The bite in itself would be of but little account, but in all the country between the Republican River and the Indian

territory, it is almost invariably followed up by that most horrible of all horrors, Hydrophobia. I am convinced that the terrible disease is the natural result to man of the bite of the skunk (in the territory designated), and that, while inflicting it on the person bitten, *it does not follow that the skunk is himself afflicted with the malady.* I judge this to be the case, firstly, from the fact that skunks are very numerous in the valleys of the Arkansas and its tributaries; whilst the number of men bitten each year with fatal result is so great and so widely separated, both in location and time, as to indicate an epidemic amongst the skunks which, if each were equally rabid, would soon exterminate the whole race. Secondly, from the actions of the biting animals. The bite is not the senseless snap of a rabid animal, but is the result of appetite. The skunk comes into camp in search of food, deliberately sits down on the hand or face of a man, and begins eating. If disturbed, he cocks his tail and stands on the defence; but if a fire is made, or a candle lit, or he be alarmed by noise and bustle, he scampers off into the darkness, to return again when all is quiet. Thirdly, though I have seen many dogs bitten by skunks, I have never known a dog or other lower animal to go mad from such a bite. The crowd of buffalo hunters that flocked to the plains in 1872-3-4 suffered greatly from skunk bites. During 1872-3, while stationed at Fort Dodge, I knew by report of sixteen cases, every one of which proved fatal."

He mentions that an assistant surgeon at Fort Hays treated eleven cases of skunk-bite, ten of which resulted in Hydrophobia, and were fatal.

From inquiries instituted, he is inclined to believe that this singularly fatal result of skunk-bite is confined to the valley of the Arkansas.

Allusion is also made to wolves frequently becoming rabid on the plains, and that when so they rush into the Indian villages, make no attempt to leave, but attack every one. The Indians assert that no person ever recovers after having received the smallest scratch from the teeth of the rabid animal. Rabid wolves are most frequent in February and March. "They (the Indians) make no attempt at treatment; and one or two instances were related where an Indian, on being affected with the hydrophobial spasms, threw himself into the water and was drowned."

HYDROPHOBIA.—Two deaths from Hydrophobia have occurred at Aldbourne, near Hungerford, recently. During the month of April a dog belonging to a dealer at Lambourne Woodlands, bit a cow and six dogs. One of the latter bit a shepherd named Lee, as well as the bailiff to Mr. T. Brown of Upham. Both men died on Thursday last week. The dog was shot the next day. The cow and all the other dogs which were bitten by Horn's dog died from the effects of the bites.—A fawn-coloured greyhound presenting symptoms of Rabies has been shot at Erith. The animal, first noticed at Woolwich, ran through the streets of Plumstead, and, before being captured at Erith, bit two other dogs and twenty persons on the road. Turning up at the ballast wharf of Mr. Parish, of Erith, the dog inflicted seven lacerated wounds upon Mr. Parish before he could extricate himself from it. It then ran into the shop of Mr. Astin, and bit his assistant.

Correspondence.

A HOWL FROM THE "SERVICE."

To the Editor of the VETERINARY JOURNAL.

SIR,—Can you tell us when we poor army veterinary surgeons are going to see anything done for us, or are the authorities prolonging the agony until the Department dwindles away, as it will rapidly do, unless our pay and position be greatly improved? Here we are in exactly the same state, with regard to pay and retirement, as we were nearly twenty years ago—our last warrant being of the antiquated date of 1859! While other departments in the army have had warrant after warrant, each one giving an additional advantage in one way or another, we poor wretches have remained exactly as we were, and apparently will continue in a state of "as you were" for some considerable time longer. It is really too bad of "the powers that be" to play so cruelly upon men's feelings. We have been called a "long-suffering department," and, by Jove, I think we have earned the title. Why, it is more than a year since Mr. Hardy said he was anxious to see our position improved! By the way, I wonder how much longer the actuaries he mentioned will be so terribly employed, that they cannot afford to expend a few days upon our small department?

We, out here in India, have heard of various changes said to have been proposed and rejected, or set on one side; but from being so widely separated from one another, real departmental news becomes greatly distorted. It is very aggravating to be, as it were, so much in a fog regarding everything going on at home; so pray, kind friends, enlighten us.

I am, etc.,

Bengal, 26*th April.* "A HOWLER."

[Our correspondent has every reason to be dissatisfied, and he is no exception to the great majority in the Department. But we hope some improvement will soon be effected, and we have reason to know that the Principal is doing all he possibly can to expedite matters, and to move the torpid beings who appear to have been born only to act as depressors or checks to the promotion of just claims. The profession has the adjustment of grievances very much in its own hands; and when it knows that it is impossible for its members in the army to live respectably without spending £100 or £200 a year of their own private means in the service of a generous country, or suffer expatriation in the sweltering plains of India in order to be able to exist (financially), we can scarcely wonder if it should be ready to give the aspirant for an army veterinary surgeon's career the advice *Punch* gave to those about to marry—"Don't." Good recruits will certainly not enter the service until their position and prospects are greatly improved. In the meantime the Service must suffer.]

CASTRATION OF CRYPTORCHIDS, AND OVARIOTOMY.

To the Editor of the VETERINARY JOURNAL.

SIR,—I have been a good deal surprised by your editorial notice of Mr. Miles' "Ovariotomy and Castration of 'Ridglings,'"—and fearing that your over-confiding nature may serve to mislead some of your readers, I hasten

to remind you of the proverbial "smartness" of the Yankee. No country but America could have "raised" a *Barnum*, no other soil could have brought *wooden nutmegs* to perfection. The fertility of the American mind is shown in all walks of life, and in none more so than in the treatment of sick and lame animals. The land swarms with "professors" who have never held chair in university or college, who are not even graduates of any seat of learning, but who will confidently undertake what you, sir, with all your "wit and lear'," would humbly decline. I can send you men by the hundred who will remove a bone, spavin, ring-bone, or splint of old standing, and leave the bone in its original smoothness and perfection; who will stop the growth of a ring-bone by cutting out its feeders in the fetlock pad; who will restore any sick cow to sound health by boring the root of the horn with a gimlet, and rubbing in peppers and other irritants; or who will recuperate the ailing hog by removing an unshed deciduous tooth which has become slightly stained with black. Nor are these wonderful achievements incompatible with brilliant success in other walks of life. Within ten miles of where I write, upon a rickety wooden shanty, hangs a signboard, rough and unplaned, but setting forth in rude and ungainly letters the inmate's occupations as follows: "Clocks and Watches repaired; Ring-bones and Spavins cured."

But to return to Mr. Miles and the cryptorchids. This gentleman, as he himself informed me, is an Illinois farmer, who has had no opportunity for acquiring a knowledge of medicine other than private study. He deserves the more credit for what he has done, and I do not seek to detract in the slightest degree from his just claims. I would merely state the facts in the case.

Cryptorchids, then, may be divided into three principal categories: 1st, those in which the missing testicle is merely arrested in the inguinal canal; 2nd, those in which the missing organ lies at the internal ring, but has a distinct connexion with the perfectly-formed scrotum through the *gubernator testis;* 3rd, those in which the testicle is retained higher up in the abdomen, and the *gubernator* is so little developed that that organ cannot be availed of for drawing it down. In many of these last cases the internal ring is closed by a firm membrane, and no scrotum has been formed. It is upon the first two classes of cases only that Mr. Miles operates.

I speak from information furnished by himself during a call he made at my office in the Centennial Live Stock Grounds at Philadelphia last autumn. In answer to my question as to what he would do in case the testicle were retained higher up in the abdomen, he confessed that "he guessed he must let those alone." Now, a large majority of even these can be reached and extracted through the inguinal ring, by first incising the occluding membrane where it exists, and then with the oiled hand in the rectum searching for the missing organ, and pressing it through the ring, or at least, bringing it in contact with the opening, so that the testis or cord can be seized from without, and their evulsion effected. This, which I have practised for the past eight years, meets many cases that cannot be castrated by Mr. Miles's method of manipulating from without only.

I forego any more minute description, to hasten the departure of this note, if mayhap it may reach you in time for the June issue; but I am just going to press with a work on castration in all domestic animals, which will give full details.

I am surprised at the neglect of this operation in Great Britain, as it has been practised in Denmark for a number of years, and has been repeatedly described in the Continental journals. Yet, if my memory is not at fault, the Danes ignore the manipulations through the rectum.

Regarding ovariotomy in cows and mares, Mr. Miles informs me that he

follows the old method of making an incision through the flank, which, as I informed him, can only be named to be condemned by all who know anything of the incomparably easier and safer operation by the vagina. The flank operation in cows and mares ought to be entirely obsolete, on account of the danger of inflammation from exposure to the air, and from contact with germs which are filtered out in passing through the vagina. Then, as regards facility, the vaginal operation can be performed with the cow standing, tied by the neck, and merely steadied against a wall by an assistant. The effect on the system is immeasurably less, as it is rare to find any interference with the appetite, the general health, or the secretion of milk, after the first twenty-four hours. Yours very truly,

JAMES LAW.

Cornell College, Ithaca, N.Y., *May 12th*, 1877.

[It was certainly far from our intention to mislead our readers with regard to Mr. Miles. We only knew for a fact that the operation he was certified to excel in, by authorities whom we believed to be competent judges, was not, to our knowledge, performed in this country; though we were well aware that it was successfully practised on the Continent. We confess that we are never above learning, even from a farmer; and though we have personally castrated large numbers of horses in nearly all climates, often under the most disadvantageous circumstances and by rough and ready methods, with a fair share of success, yet we hold ourselves open to improvement, come from whom or whence it may. Cryptorchids we have not had an opportunity of trying our hand upon.]

THE CHAIN SAW IN VETERINARY OBSTETRICS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In to-day's *Journal* appears a letter from Mr. Hoole, in which he is desirous to know whether we could manufacture a chain saw stronger than the French pattern. In reply, we beg to say that we have, and still make, chain saws of various lengths and substances, and the price is not increased by having them made stronger. Yours obediently,

ARNOLD & SONS.

35 and 36, West Smithfield, *June 1st*, 1877.

THE SUPPRESSION OF IMPOSTORS.—CERTIFICATES OF SOUNDNESS.

To the Editor of the VETERINARY JOURNAL.

SIR,—I wish to make a few remarks on the letter of "Bones," inserted in this month's issue of your *Journal;* also on Mr. R. Poyser's communication relative to certificates of soundness.

For the past two years there has resided in my district one of these impudent impostors, who, in his younger days, used to assist in milking his mother's cows, then carry the opalescent fluid to the houses of the customers night and morning. One day ascertaining that a farrier and cowleech (self-dubbed "veterinary surgeon") residing at Cheam, in this county, required some assistance, he tendered his services; being accepted, he remained there

two years, returned to his native place, declared himself to the public as a veterinary surgeon, opened a forge where horses are shod on improved principles, and in January last increased his notoriety by the addition of the initials M.R.C.V.S. on his labels and after his name in our local directory. I thought it about time to interfere, as reports reached me that he was representing himself to the public, inclusive of several of my employers, as a member of our profession. So I cut the page from the directory, where, under the heading of "Veterinary Surgeons," his name appeared with the aforesaid initials, and forwarded it direct to our President, with a letter asking for assistance to arrest the course adopted by this impostor. In due course I was informed that orders had been given to the secretary to send me the usual form for insertion in the two local newspapers; and on the 29th day of May came the following:—

"10, Red Lion Square, W.C.

"DISCLAIMER.—The Registrar of the Royal College of Veterinary Surgeons has had his attention directed to the 'Kingston Local Directory,' where, under the heading of 'Veterinary Surgeons,' the name of J. C. Aspin, Shrublands and Britannia Road, Surbiton, appears as an M.R.C.V.S. He begs to state that there is no such name on the Register, and therefore he is not a member of the Royal College of Veterinary Surgeons.

"W. H. COATES,
"*Secretary.*

"By order of the President,
"28*th May*, 1877."

To which might be justly added,—He cannot legally call himself a "veterinary surgeon."

In addition to advertising the above in the newspapers, I had five hundred copies of it printed for circulation in the district, trusting that it might deter some persons from entrusting valuable horses and stock in his hands.

I agree with "Bones" that if this matter were properly brought before Parliament next session, an Act would be granted rendering it penal for any unqualified person to style himself "veterinary surgeon." How is this to be done? Not by the assistance of our esteemed President or the Council: they will not stir one inch in the matter,—rely on this fact; but by the united help of the members of the profession. Get up petitions to the House of Commons, subscribe for the expense of drafting the parliamentary bill, and I will undertake to find an M.P. to present the petition and lay the bill on the table of the House: being convinced this is the best course to adopt to realise the wishes of our profession.

A medical friend has just called in, and informs me that the sister profession have now presented a bill to Parliament to amend the Medical Act of 1858, and make the penal conditions more stringent against unqualified persons practising medicine and surgery. Let us follow their example.

Respecting the form of certificate of soundness given by members of our profession, for the past twenty years I have always used the following: "I hereby certify that, at the request of Mr. ———, I have this day examined a bay (brown, or any other colour) gelding or mare, which I am of opinion is (sound, or) unsound from (say) Spavins in both hocks." But I should hesitate to assert that the animal was "absolutely sound," as a recent case will illustrate. Not three months since a member of the profession examined for a client a valuable well-bred animal, six years old, and gave his opinion that it was the best-formed and soundest animal that had been submitted to his inspection for several years. On receipt of this opinion the gentleman parted with his cheque for £250. Apparently all went well until the evening of the 25th of May, on which day the animal had a sharp journey in harness, and did not reach his stable till ten p.m. He then drank his hay-tea, but the

groom states he ate but little of his feed; he attributed his not eating to the distance he had travelled, and thought it would be all cleared by next morning, so left him for the night. Judge of his consternation, on entering the box about six a.m. of the 26th ult., to find the horse dead. He at once sent a report of the occurrence to his master, and about 9.30 a.m. I was summoned to make a *post-mortem* examination of the animal. I commenced the autopsy, in the presence of the owner, by exposing the abdominal cavity; the contents were normal, except the kidneys, which were unusually large and flabby, though their internal structure afforded no evidence of active disease existing during life; there was extravasation of blood into the parenchyma of liver. On exposing the thoracic cavity, I found the lungs increased in size and weight, and engorged with blood; the heart very large and flabby; there was effusion of lymph round its base; the right auricle was twice the size of the left one, with extremely thin walls, and the right ventricle was dilated and full of blood. The opposite auricle and ventricle were but slightly enlarged, though surcharged with blood. On emptying it of its contents and cleansing it, a more minute examination could be made, and disclosed a rupture of the right auriculo-ventricular valve. The brain internally was normal; externally the vessels were extremely congested. The pericardium was thinner and larger than natural. The heart, with its contents, weighed 14 lbs.

The opinion given was that the animal during its lifetime suffered from dilatation of the heart, that its sharp journey on the previous day induced in a diseased organ the tendency of the valve to rupture at any time, and that my professional *confrère* ought not to be censured for the opinion he had given three months previously.

"I am, Mr. Editor, yours obliged,

"NEMO."

EMPROSTHOTONOS *versus* AZOTUREA.

To the Editor of the VETERINARY JOURNAL.

SIR,—I observe that in your last month's impression a gentleman, who calls himself "Pleximeter," has thought fit to challenge the correctness of my diagnosis in the case which I reported to you as one of Emprosthotonos, in a previous number of your journal. I do not for one moment mean to deny the perfect right which "Pleximeter" has to his own opinion. I do, however, consider that until I know who "Pleximeter" is, I have an equal right to flatter myself with the idea that my diagnosis is quite as likely to be correct as his. Anonymous refutations, such as "Pleximeter's," do not, as a rule, deserve notice; and I must decline in this instance to enter into a controversy with an unknown adversary. Let "Pleximeter" acknowledge himself, and I will then reply to the subject-matter of his communication.

I am, Sir, yours truly,

W. E. LITT.

Shrewsbury, *June 18th*, 1877.

MENSTRUATION IN THE LOWER ANIMALS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In your issue for May last, I observe an article from Mr. Gerrard, of Market Deeping, relating to the above subject; and as I am particularly referred to in the same, I must ask your permission to offer a few remarks in

reply. My intention was to have done so last month, but pressure of professional work prevented me.

The whole tenor of Mr. Gerrard's article leads me to think that he is fully impressed with the idea that no one knows anything about the matter but himself. I am distinctly told not to give heed to text-books or the *dicta* of medical authorities, and not even to be too sure of what I see. But on the other hand, I am indirectly advised to place the utmost confidence in himself and *his dicta*—the fruits of his twenty years' study of the book of nature, as these "accord with reason, science, and common-sense!"

Mr. Gerrard must have paid very little attention to what he read in the book of nature, when he asserts that for *one* bovine female showing bloody excreta during œstrum, there are *thousands* which don't! Every practical man must allow that this is either gross misrepresentation, or the most wilful want of observation; I cannot characterise it as anything else.

It is almost needless—and certainly useless as regards Mr. Gerrard—for me again to call attention to the fact, that pelvic abscesses (whether sanious or purely purulent, and the result of injury) have nothing in common with a diseased, isolated, or distended uterus; and that, therefore, the whole of Mr. Gerrard's hypercritical and uncourteously sarcastic remarks are quite beside the point in question. He is arguing about traumatically-diseased parts entirely extra-uterine; while I am drawing quite justifiable conclusions from data relating to a diseased state of the uterus arising from retention of the usual, and more or less sanguinolent, œstral products—which retention was the result of genuine congenital atresia of the vagina.

Laying aside, however, the question of sanguineous excreta during bovine œstration, I may perhaps be allowed to ask what right Mr. Gerrard has to doubt the details of the case of Impervious Vagina given by me as occurring in my practice? Does he mean to allege that I concocted the case, or that I was incapable of judging whether my hand was inside the quey's uterus or in the cavity of a large sanious abscess?

About its having been the uterus, there was not, and is not, the shadow of a doubt; for having seen the butcher who slaughtered the quey, I find that the uterus was cut out and laid aside for my inspection. It was much enlarged, distended, and discoloured; and there was no passage between the vulva and *os uteri* ("outside opening" and "mouth of bed," according to the butcher), except what had been torn open by my hand. Unfortunately, I never saw the parts thus preserved for my examination.

I consider that the captious way in which Mr. Gerrard has handled my communication, is more than enough to retard most hard-working practitioners from putting themselves to the trouble of recording uncommonly interesting cases. As a matter of course, he is quite at liberty to cavil at any theoretical conclusions which may be drawn from the *facts* of the case; but to dispute these facts themselves is coming extremely near actual impertinence.

More than this, however, Mr. Gerrard goes a step farther, and credits me with saying that the sanguinolent œstral discharge in the mare *coagulates* during its retention in the vaginal canal. I most emphatically deny ever having said anything of the kind; so that Mr. Gerrard very likely met with this, as well as other erroneous ideas, during his very extended studies in the book of nature!

With like rashness, and as much truth, Mr. Gerrard, in favouring us with a paragraph relating to two Edinburgh medical gentlemen, tells us a tale about the two fibrous cords, called "retractors of the penis." Now, it so happens that the retractors of the penis in the ox tribe are not "*two fibrous cords*"; and the well-known lecturer on physiology and histology was quite correct

in speaking of what he showed Mr. Gerrard as "receptacles for semen"; for without doubt they must have been the *vesiculæ seminales* and their ejaculatory ducts, which are well developed in bovines.

In conclusion, allow me to ask Mr. Gerrard, What benefit am I to derive from being told that Mr. Andrew Spreull carried a hydrocephalic specimen from the museum to the lecture-room?

Faithfully yours,

Banff, N.B. A. E. MACGILLIVRAY.

CORRIGENDUM.

IN the description of the Chain Saw used by Mr. Hoole in obstetric practice, last month, the size should have been described as nearly *one-sixteenth* of an inch in thickness, and not *one-sixth*.

TO CORRESPONDENTS.

A valued correspondent wishes to arrive at a rough estimate of the number of cases of Pneumonia occurring in the practice of veterinary surgeons, and due to medicines, administered by empirics, passing down the trachea instead of the œsophagus. The statistics for a year would be sufficient, though for a lesser period they would be acceptable.

COMMUNICATIONS from Messrs. Moreton, Smith, Billings, Bates, Wolstenholme, Robinson, Cammack, McEachran, and others, will appear in our next.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from J. B. Martin, Rochester; "Ubique"; J. C. Berne, R.A., Madras; Professor Walley, Edinburgh; J. D. Allman, London; T. Hopkin, Manchester; W. Cumming, Edinburgh; "A Howler;" W. H. Coates, London; T. J. Campsall, Rotherham; Arnold and Sons, London; Professor Law, Cornell University, U.S.A.; F. S. Billings, Berlin; J. Rowe, Jun., London; W. A. Cox, Manchester; J. W. Hill Wolverhampton; Professor MacGillavry, Utrecht; F. Smith, Veterinary Department, Woolwich; J. B. Wolstenholme, Manchester; A. E. MacGillivray, Banff; "Nemo"; R. Reynolds, Liverpool; R. Moreton, Hexham J. Hoole, Sleaford.

BOOKS: *A. Zundel*, Dictionnaire de Médecines, etc., Vétérinaires, vol. iii., part 2; Second Annual Report of the American Veterinary Hospital; "Whose Dog is it?" *A. Bruce*, Infectious and Contagious Diseases of Cattle; Bulletin de la Société Centrale de Médecine Vétérinaire; *G. Fogliata*, Anatomia Fisiologia e Ateleogenia del Cuscinetto Plantare e del Fetone Corneo del Piede del Cavallo.

JOURNALS: *L'Abeille Medicale; Annales de Méd. Vétérinaire; Archives de Méd. Vétérinaire; La Veterinaria Española; Recueil de Méd. Vétérinaire; Wochenschrift für Thierheilkunde, etc.; Der Thierarzt; Journal de Médecine Vétérinaire; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Lancet; British Medical Journal; Edinburgh Medical Journal; Medical Press; Revue Vétérinaire; Journal of the National Agricultural Society of Victoria; American Veterinary Review, No. 4.*

NEWSPAPERS: *North British Agriculturist; Farmer; Mark Lane Express; Agricultural Gazette; Live Stock Journal; Illustrated Australian News; Australasian Sketcher; Australasian; Overland Mail; Albany Argus; The "Field" of Ireland.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.